

SEQUENCE LISTING

```
<110> THE UNIVERSITY OF SYDNEY
<120> ANTIGENS AND THEIR DETECTION
<130> REEVES
<140>
<141>
<160> 68
<170> PatentIn Ver. 2.0
<210> 1
<211> 1773
<212> DNA
<213> Escherichia coli
<400> 1
atgcgacgta tagaacgaat accggggtta tcggcgtaag cggggcaaag tttacgattt 60
attttttggc ttaatgacac gaacagcaac gaggaagggg agtatttcga ccgctagaaa 120
aaaattetaa aggttgtgag tgaccagacg ataacagggt tgacggcgac gaagccgaag 180
ggtggaagcc caatacttaa accgtagact tgaaaacagg aaaatgaatc atggcacaag 240
tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag aaccagtctg 300
cgctgtcgac ttctatcgag cgcctctctt ctggtctgcg cattaacagc gctaaagatg 360
acgetgeggg ccaagegatt getaaceget teacttetaa cateaaaggt etgacteagg 420
ccgcacgtaa cgccaacgac ggtatttctc tggcgcagac cactgaaggc gcactgtctq 480
aaatcaacaa caacttgcag cgtgttcgtg aactgaccgt tcaggccact accggtacta 540
actctgattc tgacctgtct tcaatacagg acgaaatcaa atcccgtctc gatgaaattg 600
accgcgtatc cggtcagact cagttcaacg gcgttaatgt tctttccaaa gatggttcaa 660
tgaaaattca ggttggtgcg aatgatggtc aaactatctc catcgatctg aagaaaattg 720
attetteaac tttggggetg aatggettet cagtttetaa aaactetett aatgteagea 780
atgctatcac atctatcccg caagccgcta gcaatgaacc tgttgatgtt aacttcggtg 840
atactgatga gtctgcagca atcgcagcca aattgggggt ttccgatacg tcaagcctgt 900
cgctgcacaa catccttgat aaagatggta aggcaacagc tgattatgtt gttcagtcag 960
gtaaagactt ctatgctgct tctgttaatg ccgcttcagg taaagtaacc ttaaacacca 1020
ttgatgttac ttatgatgat tatgcgaacg gtgttgacga tgccaagcaa acaggtcagc 1080
tgatcaaagt ttcagcagat aaagacggcg cagctcaagg ttttgtcaca cttcaaggca 1140
aaaactattc tgctggtgat gcggcagaca ttcttaagaa tggagcaaca gctcttaagt 1200
taactgatct gaatttaagt gatgttactg atactaatgg taaggtaacc acaactqcqa 1260
ctgagcaatt tgaaggtgct tcaactgagg atccgctggc gcttctggat aaagctattg 1320
catcagtcga caaattccgg tcttctctag gtgccgtgca gaaccgtctc gattccgcta 1380
teaceaacet gaacaacace aceaceaace tgtetgaage geagteeegt atteaggaeg 1440
cegactatge gacegaagtg tecaacatgt egaaagegea gateateeag caggeaggta 1500
acteegtget gtetaaageg aaceaggtae egeageaagt tetgteaetg ttacaagget 1560
aatggeetta acetgeetga eeeegeeace ggeggggtit titetgteeg caatttaeeg 1620
ataaccccca aataacccct catttcaccc actaatcgtc cgattaaaaa ccctgcagaa 1680
acggataatc atgccgataa ctcatataac gcagggctgt ttatcgtgaa ttcactctat 1740
accgctgaag gtgtaatgga taaacactcg ctg
                                                                   1773
<210> 2
<211> 500
<212> DNA
<213> Escherichia coli
<400> 2
aacagcetet egetgateae teagaacaae ateaacaaaa accagtette aatgtetaet 60
gccattgagc gtctgtcttc cggtctgcgt atcaacagcg caaaaqatqa cqctqctqqc 120
caggcgattg ccaaccgctt cacctctaac atcaaaggtc tgactcaggc agctcgtaac 180
gccaacgacg gtatctccgt tgcacagacc actgaaggcg cactgtctga aatcaacaac 240
aacctgcagc gtatccgtga gctgactgtt cagtcttcta cgggtactaa ctctqaatcc 300
gatctgaact caatccagga cgaaattaaa tcccgtctgg acgaaattga ccgcgtatcc 360
ggtcagaccc agttcaacgg cgtgaacgtg ctggcaaaag acggctccat gaaaattcag 420
gttggcgcga acgatggtga aaccatcacc atcgacctga aaaaaattga ctcttctact 480
ttaaacctga ctgggtttaa
```

```
<210> 3
<211> 500
<212> DNA
<213> Escherichia coli
<400> 3
ctcagtatgc tgtcaccggc agtacaggtg ccgtaactta cgatccagat acagatcctg 60
ccgcgactgg tgatattgtt tctgcttatg ttgatgatgc aggtacattg acaactgatg 120
caaacaaaac tgtaaaatat tatgcccaca ctaatggtag cgtcacgaac gacagtggtt 180
cagctattta cgcaactgaa gcgggcaaat tgactactga agcgtctaca gctgctgaaa 240
ctaccgctaa cccactgaaa gccctggacg atgcaatcag ccagatcgac aaattccqtt
cttctctggg tgctgtacag aaccgtctgg attctgcggt aaccaacctg aacaacacca 360
ccaccaacct gtctgaagcg cagtcccgta ttcaggacgc cgactatgcg accgaagtgt 420
caaatatgtc taaagcgcag atcatccagc aggccggtaa ctccgtgttg gctaaagcta 480
accaggttcc tcagcaggtt
<210> 4
<211> 399
<212> DNA
<213> Escherichia coli
agectgtege tgttgaceca gaataacetg aacaaatete agtettetet gageteegee 60
attgagcgtc tetettetgg cetgcgtatt aacagtgeta aagatgacge agcaggteag 120
gcgattgcta accgttttac agcaaatatt aaaggtctga ctcaggcttc ccgtaacgcg 180
aatgatggta tttctgttgc gcagaccact gaaggcgcgc tgaatgaaat taacaacaac 240
ctgcagcgtg tacgtgaact gactgttcag gcaactaacg gtactaactc tgacagcgat 300
ctttcttcta tccaggctga aattactcaa cgtctggaag aaattgaccg tgtatctgag 360
caaactcagt ttaacggcgt gaaagtcctt gctgaaaat
<210> 5
<211> 417
<212> DNA
<213> Escherichia coli
<400> 5
gcacgttagt tgttaacggt gcaacttacg atgttagtgc agatggtaaa acgataacqq 60
agactgcttc tggtaacaat aaagtcatgt atctgagcaa atcagaaggt ggtagcccga 120
ttctggtaaa cgaagatgca gcaaaatcgt tgcaatctac caccaacccg ctcgaaacta 180
tegacaaage attggetaaa gttgacaate tgegttetga eeteggtgea gtacaaaace 240
gtttcgactc tgctatcacc aaccttggca acaccgtaaa caacctgtct tctgcccgta 300
gccgtatcga agatgctgac tacgcgaccg aagtgtctaa catgtctcgt gcgcagatcc 360
tgcaacaagc gggtacctct gttctggcgc aggctaacca gaccacgcag aacgtac
<210> 6
<211> 950
<212> DNA
<213> Escherichia coli
<400> 6
aacaaaaacc agtctgcgct gtcgacttct atcgagcgcc tctcttctgg tctgcgtatt 60
aacagcgcta aagatgacgc cgcgggccag gcgattgcta accgctttac ttctaacatc 120
aaaggtetga eteaggeege aegtaaegee aaegaeggta tttetetgge geagaegget 180
gaaggcgcgc tgtcagagat taacaacaac ttgcagcgta ttcgtgaact gaccgttcag 240
gcctctaccg gcacgaactc tgattccgac ctgtcttcta ttcaggacga aatcaaatcc 300
egtettgatg aaattgaceg tgtatetggt cagacecagt teaaeggtgt gaaegtgetg 360
tegaaaaaeg attegatgaa gatteagatt ggtgeeaatg ataaceagae gateageatt 420
ggcttgcaac aaatcgacag taccactttg aatctgaaag gatttaccgt gtccggcatg 480
gcggatttca gcgcggcgaa actgacggct gctgatggta cagcaattgc tgctgcggat 540
gtcaaggatg ctgggggtaa acaagtcaat ttactgtctt acactgacac cgcgtctaac 600
agtactaaat atgcggtcgt tgattctgca accggtaaat acatggaagc cactgtagtc 660
attaceggta eggeggegge ggtaaetgtt ggtgeagegg aagtggeggg ageegetaca 720
gccgatccgt taaaagcact ggatgccgca atcgctaaag tcgacaaatt ccgctcctcc 780
ctcggtgccg ttcaaaaccg tctggattct gcggtcacca acctgaacaa caccaccacc 840
aacctgtctg aagcgcagtc ccgtattcag gacgccgact atgcgaccga agtgtccaac 900
atgtcgaaag cgcagattat ccagcaggcg ggcaactccg tgctgtctaa
```

```
<210> 7
<211> 1212
<212> DNA
<213> Escherichia coli
<400> 7
aacaaaaacc agtctgcgct gtcgacttct atcgagcgcc tctcttctgg tctgcgtatt 60
aacagegeta aagatgaege egegggeeag gegattgeta acegetteae ttetaacate 120
aaaggtetga eteaggeege aegtaaegee aaegaeggta tetetetgge geagaeeaet 180
gaaggcgcgc tgtctgaaat caacaacaac ttgcagcgtg tgcgtgagtt gaccgttcag 240
gcgacgaccg ggactaactc tgattctgac ctgtcttcta ttcaggacga aatcaaatcc 300
cgtctggatg aaattgatcg cgtttccggt cagacccagt tcaacggcgt gaatgtgctg 360
gcgaaagatg gttcgatgaa gattcaggtt ggcgcgaatg atgggcagac tattagcatt 420
gatttgcaga agattgactc ttctacatta ggactgaacg gtttctccgt ttcgggtcag 480
tcacttaacg ttagtgattc cattactcaa attaccggtg ccgccgggac aaaacctgtt 540
ggtgttgatt tcactgctgt tgcgaaagat ctgactactg cgacaggtaa aacagtcgat 600
gtttctagcc tgacgttaca caacactctg gatgcgaaag gggctgctac atcacagttc 660
gtcgttcaat ccggcaatga tttctactcc gcgtcgatta atcatacaga cggcaaagtc 720
acgttgaata aagccgatgt cgaatacaca gacaccgata atggactaac gactgcggct 780
actcagaaag atcaactgat taaagttgcc gctgactctg acggctcggc tgcgggatat 840
gtaacattcc aaggtaaaaa ctacgctaca acggtttcaa cggcacttga tgataatact 900
gcggcaaaag caacagataa taaagttgtt gttgaattat caacagcaaa accgactgca 960
cagtteteag gggettette tgetgateea etggeaettt tagacaaage tattgeacag 1020
gttgataett teegeteete eeteggtgeg gtgeaaaaee gtetggatte egeagtaaee 1080
aacctgaaca acaccaccac caacctgtct gaagcgcagt cccgtattca ggacgccgac 1140
tatgctacag aagtgtccaa catgtcgaaa gcgcagatca tccagcaggc aggtaactcg 1200
gtgctgtcca aa
<210> 8
<211> 1647
<212> DNA
<213> Escherichia coli
<400> 8
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgccgcggg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcgcagac caccgaaggc 240
gcgctgtccg aaattaacaa caacttacag cgtattcgtg aactgacggt tcaggcttct 300
accgggacta actctgattc ggatctggac tccattcagg acgaaatcaa atcccgtctc 360
gacgaaattg accgcgtatc cggtcagacc cagttcaacg gcgtgaacgt actggcaaaa 420
gacggttcga tgaaaattca ggttggtgcg aatgacggcc agactatcac tattgatctg 480
aagaaaattg actctgatac gctggggctg aatgggttta atgtgaacgg caaaggggaa 540
acggctaata cggcagcaac cctgaaagat atgtctggat tcacagctgc ggcggcacca 600
9999gaactg ttggtgtaac tcaatatact gacaaatcgg ctgtagcaag tagcgtagat 660
attctaaatg ctgttgctgg cgcagatgga aataaagtta caactagcgc cgatgttggt 720
tttggtacac cagccgctgc tgtaacctat acctacaata aagacactaa ttcatattcc 780
geogettetg atgatattte cagegetaac etggetgett teeteaatee teaggeegga 840
gatacgacta aagctacagt tacaattggt ggcaaagatc aagatgtaaa catcgataaa 900
teeggtaatt taaetgetge tgatgatgge geagtaettt atatggatge taeeggtaae 960
ttaactaaaa ataatgctgg tggtgataca caagctactt tggctaaact tgctactgct 1020
actggtgcta aagccgcgac catccaaact gataaaggaa cattcaccag tgacggtaca 1080
gcgtttgatg gtgcatcaat gtccattgat accaatacat ttgcaaatgc agtaaaaaat 1140
gacacttata ctgccactgt aggtgctaag acttatagcg taacaacagg ttctgctgct 1200
gcagacaccg cttatatgag caatggggtt ctcagtgata ctccgccaac ttactatgca 1260
caagctgatg gaagtatcac aactactgag gatgcggctg ccggtaaact ggtctacaaa 1320
ggttccgatg gtaagttaac aacggatacg actagcaaag cagaatcaac atcagatccg 1380
ctggcagctc ttgacgacgc tatcagccag atcgacaaat tccgctcctc cctgggtgcg 1440
gtgcaaaacc gtctggattc cgcagtgacc aacctgaaca acaccactac caacctgtct 1500
gaagcgcagt cccgtattca ggacgccgac tatgcgaccg aagtgtccaa catgtcgaaa 1560
gegeagatta teeageagge eggtaaetee gtgetggeaa aagetaaeea ggtteegeag 1620
caggttctgt ctctgctgca gggttaa
                                                                  1647
```

```
<210> 9
 <211> 1758
 <212> DNA
 <213> Escherichia coli
<400> 9
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
aaccagtetg egetgtegag ttetategag egtetgtett etggettgeg tattaacage 120
gcgaaggatg acgccgcggg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcacagac caccgaaggc 240
gegetgtetg aaateaacaa caacttacag egtateegtg agetgaeggt teaggettet 300
accggaacta actetgatte ggatetggae tecatteagg acgaaateaa atecegtett 360
gatgaaattg accgcgtatc cggccagacc cagttcaacg gcgtgaacgt actggcaaaa 420
gacggttcga tgaaaattca ggttggtgcg aatgacggtg aaactatcac tatcgacctg 480
aagaaaatcg attctgatac tctgggtctg aatggtttta acgtaaatgg taaaggtact 540
attaccaaca aagctgcaac ggtaagtgat ttaacttctg ctggcgcgaa gttaaacacc 600
acgacaggtc tttatgatct gaaaaccgaa aataccttgt taactaccga tgctgcattc 660
gataaattag ggaatggcga taaagtcacc gttggcggcg tagattatac ttacaacgct 720
aaatctggtg attttactac caccaaatct actgctggta cgggtgtaga cgccgcggcg 780
caggetactg atteagetaa aaaacgtgat gegttagetg ceaecettea tgetgatgtg 840
ggtaaatctg ttaatggttc ttacaccaca aaagatggta ctgtttcttt cgaaacggat 900
tcagcaggta atatcaccat cggtggaagc caggcatacg tagacgatgc aggcaacttg 960
acgactaaca acgctggtag cgcagctaaa gctgatatga aagcgctgct taaagccgcg 1020
agcgaaggta gtgacggtgc ttctctgaca ttcaatggca ctgaatatac tatcgcaaaa 1080
gcaactcctg cgacaacctc tccagtagct ccgttaatcc ctggtgggat tacttatcag 1140
gctacagtga gtaaagatgt agtattgagc gaaaccaaag cggctgccgc gacatcttca 1200
attaccttta attccggtgt actgagcaaa actattgggt ttaccgcggg tgaatccagt 1260
gatgctgcga agtcttatgt ggatgataaa ggtggtatta ctaacgttgc cgactataca 1320
gtctcttaca gcgttaacaa ggataacggc tctgtgactg ttgccgggta tgcttcagcg 1380
actgatacca ataaagatta tgctccagca attggtactg ctgtaaatgt gaactccgcg 1440
ggtaaaatca ctactgagac taccagtgct ggttctgcaa cgaccaaccc gcttgctgcc 1500
ctggacgacg ctatcagete catcgacaaa tteegttett eeetgggtge tatccagaac 1560
cgtctggatt ccgcagtcac caacctgaac aacaccacta ccaacctgtc tgaagcgcag 1620
tecegtatte aggaegeega etatgegaee gaagtgteea acatgtegaa agegeagatt 1680
atccagcagg ccggtaactc cgtgctggca aaagccaacc aggtaccgca gcaggttctg 1740
tctctgctgc agggttaa
                                                                   1758
<210> 10
<211> 1383
<212> DNA
<213> Escherichia coli
<400> 10
aacaaatctc agtcttctct tagctctgct attgagcgtc tgtcttctgg tctgcgtatt 60
aacagegeaa aagaegatge ageaggteag gegattgeta acegttttae ggeaaatatt 120
aaaggtctga cccaggcttc ccgtaacgca aatgatggta tttctgttgc gcagaccact 180
gaaggtgcgc tgaatgaaat taacaacaac ctgcagcgta ttcgtgaact ttctgttcag 240
gcaactaacg gtactaactc tgacagcgat ctttcttcta tccaggctga aattactcaa 300
cgtctggaag aaattgaccg tgtatctgag caaactcagt ttaacggcgt gaaagtcctt 360
gctgaaaata atgaaatgaa aattcaggtt ggtgctaatg atggtgaaac catcactatc 420
aatctggcaa aaattgatgc gaaaactctc ggcctggacg gttttaatat cgatggcgcg 480
cagaaagcaa caggcagtga cctgatttct aaatttaaag cgacaggtac tgataattat 540
gargttggcg gtaaaactta taccgtgaat gtggagagcg gcgcggttaa gaatgatgct 600
aataaagatg tttttgtaag cgcagctgat ggatcgctga cgaccagtag tgatactaaa 660
gtatccggtg aaagtattga tgcaacagaa ctagcgaaac ttgcaataaa attagctgac 720
aaaggctcca ttgaatacaa gggcattaca tttactaaca acactggcgc agagcttgat 780
gctaatggta aaggtgtttt gaccgcaaat attgatggtc aagatgttca atttactatt 840
gacagtaatg cacccacggg tgccggcgca acaataacta cagacacagc tgtttacaaa 900
aacagtgcgg gccagttcac cactacaaaa gtggaaaata aagccgcaac actctctgat 960
ctggatctta atgcagccaa gaaaacaggt agcactttag ttgtaaatgg cgccacctac 1020
aatgtcagcg cagatggtaa aacggtaact gatactactc ctggtgcccc taaagtgatg 1080
tatetgagea aateagaagg tggtageeeg attetggtaa acgaagatge ageaaaateg 1140
ttgcaatcta ccaccaaccc gctcgaaact atcgacaagg cattggctaa agttgacaat 1200
ctgcgttctg acctcggtgc agtacaaaac cgtttcgact ctgccatcac caaccttggc 1260
aacacegtaa acaacetgte ttetgeeegt ageegtateg aagatgetga etaegegaee 1320
gaagtgtcta acatgtctcg tgcgcagatc ctgcaacaag cgggtacctc tgttctggcg 1380
caq
```

```
<210> 11
<211> 2013
<212> DNA
<213> Escherichia coli
<400> 11
atggcacaag tcattaatac caacagcete tegetgatea etcaaaataa tateaacaag 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgccgcggg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttccg ttgcacagac cactgaaggc 240
gcgctgtccg aaattaacaa caacttacag cgtattcgtg aactgacggt tcaggcttct 300
accgggacta actccgattc ggatctggac tccattcagg acgaaatcaa atcccgtctg 360
gacgaaattg accgcgtate eggccagace cagtteaacg gegtgaacgt getgteeaaa 420
gatggctcga tgaaaattca ggtcggcgcg aacgatggcg aaacgattac tattgatctq 480
aagaaaattg actctgatac gctgaatctg gctggtttta acgttaacgg taaaggttct 540
gtagcgaata cagctgcgac aagcgacgat ttaaaactgg ctggtttcac taagggcacc 600
acagatacca atggcgtgac cgcgtataca aacacaatta gtaatgacaa agccaaagct 660
tecgatetgt tagetaatat caeegatgga teagtgatea etgggggagg ggcaaaeget 720
tttggcgtgg ctgcaaagaa tggttacacc tatgatgcag caagtaaatc ttatagtttt 780
gctgcagatg gtgccgattc agcgaagacg ttaagcatca ttaatccaaa caccggtgat 840
tcgtcgcagg cgacagtgac tattggtggt aaagagcaga aagttaatat ttcccaggat 900
ggaaaaatta ctgcggcaga tgataatgcg acgctgtatt tagataaaca gggaaacttg 960
acaaaaacga atgcaggtaa cgataccgca gcgacttggg atggtttaat ttccaacagc 1020
gattctaccg gtgcggttcc agttggggtt gcaactacaa ttacaattac ttctggtaca 1080
getteeggaa tgtetgttea gteegeagga geaggaatte agaeeteaac aaatteteag 1140
attettgeag gtggtgeatt tgeggetaag gtaagtattg agggaggege tgetacagae 1200
attttggtag caagtaatgg aaacataaca gcggctgatg gtagtgcact ttatcttgat 1260
gcgactactg gtggattcac tacaacggct ggaggaaata cagctgcttc gttagataat 1320
ttaattgcta acagtaagga tgctacctta accgtaactt caggtaccgg ccagaacact 1380
gtttatagca caacaggaag tggcgctcag ttcaccagtt tagcaaaagt agacacagtc 1440
aatgtcacca acgcacatgt cagtgccgaa ggtatggcaa atctgacaaa aagcaatttt 1500
accattgata tgggcggtac aggtacagta acttacacag tttccaatgg ggatgtgaaa 1560
gctgctgcaa atgctgatgt ttatgtcgaa gatggtgcac tttcagccaa tgctacaaaa 1620
gatgtaacct actttgaaca aaaaaatggg gctattacca acagcaccgg tggtaccatc 1680
tatgaaacag ctgatggtaa gttaacaaca gaagctacta ctgcatccag ttccaccgcc 1740
gateceetga aagetetgga egaageeate ageteeateg acaaatteeg etecteete 1800
ggtgcggtgc aaaaccgtct ggattccgcg gtcaccaacc tgaacaacac cactaccaac 1860
ctgtccgaag cgcagtcccg tattcaggac gccgactatg cgaccgaagt gtccaacatg 1920
togaaagege agateateea geaggeeggt aacteegtge tggeaaaage taaceaggta 1980
ccgcagcagg ttctgtctct gctgcagggt taa
<210> 12
<211> 1263
<212> DNA
<213> Escherichia coli
<400> 12
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgccgcggg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcgcagac caccgaaggc 240
gcgctgtccg aaattaacaa caacttacag cgtgtgcgtg agctgactgt tcaggcgacc 300
accggtacta actctgagtc tgacctgtct tctatccagg acgaaatcaa atctcgcctg 360
gaagagattg atcgtgtttc aagtcagact caatttaacg gcgtgaatgt tttggctaaa 420
gatgggaaaa tgaacattca ggttggggca aatgatggac agactatcac tattgatctg 480
aaaaagatcg attcatctac actaaacctc tccagttttg atgctacaaa cttgggcacc 540
agtgttaaag atggggccac catcaataag caagtggcag taggtgctgg cgactttaaa 600
gataaagctt caggatcgtt aggtacccta aaattagttg agaaagacgg taagtactat 660
gtaaatgaca ctaaaagtag taagtactac gatgccgaag tagatactag taagggtaaa 720
attaacttca actctacaaa tgaaagtgga actactccta ctgcagcgac ggaagtaact 780
actgttggcc gcgatgtaaa attggatgct tctgcactta aagccaacca atcgcttgtc 840
```

gtgtataaag ataaaagcgg caatgatgct tatatcattc agaccaaaga tgtaacaact 900

```
tctacaaccg cgccaagcaa tttaacagct aacccgctta aggctcttga tgatgcaatt 1020
 gcatctgttg ataaattccg ctcttctctc ggtgccgttc agaaccgtct ggattctgcc 1080
 attgccaacc tgaacaacac cactaccaac ctgtctgaag cgcagtcccg tattcaggac 1140
 getgaetatg egaeegaagt gteeaacatg tegaaagege agattateea geaggeeggt 1200
 aactccgtgc tggcaaaagc caaccaggta ccgcagcagg ttctgtctct gctgcagggt 1260
 <210> 13
 <211> 1368
 <212> DNA
 <213> Escherichia coli
<400> 13
aacaaatete agtettetet gageteegee attgaaegte tetettetgg cetgegtatt 60
aacagtgcta aagatgacgc agcaggtcag gcgattgcta accgttttac agcaaatatt 120
aaaggtctga ctcaggcttc ccgtaacgcg aatgatggta tttctgttgc gcagaccact 180
gaaggtgcgc tgaatgaaat taacaacaac ctgcagcgtg tacgtgaact gactgttcag 240
gcaactaacg gtactaactc tgacagcgat ctttcttcta tccaggctga aattactcaa 300
cgtctggaag aaattgaccg tgtatctgag caaactcagt ttaacggcgt gaaagtcctt 360
gctgaaaata atgaaatgaa aattcaggtt ggtgctaatg atggtgaaac catcactatc 420
aatctggcaa aaattgatgc gaaaactctc ggcctggacg gttttaatat cgatggcgcg 480
cagaaagcaa ctggcagtga cctgatttct aaatttaaag cgacaggtac tgataactat 540
gatgttggcg gtgatgctta tactgttaac gtagatagcg gagctgttaa agatactaca 600
gggaatgata tttttgttag tgcagcagat ggttcactga caactaaatc tgacacaaac 660
atagctggta cagggattga tgctacagca ctcgcagcag cggctaagaa taaagcacag 720
aatgataaat tcacgtttaa tggagttgaa ttcacaacaa caactgcagc ggatggcaat 780
gggaatggtg tatattctgc agaaattgat ggtaagtcag tgacatttac tgtgacagat 840
gctgacaaaa aagcttcttt gattacgagt gagacagttt acaaaaatag cgctggcctt 900
tatacgacaa ccaaagttga taacaagget gecacaettt eegatettga teteaatgea 960
gctaagaaaa caggaagcac gttagttgtt aacggtgcaa cttacgatgt tagtgcagat 1020
ggtaaaacga taacggagac tgcttctggt aacaataaag tcatgtatct gagcaaatca 1080
gaaggtggta gcccgattct ggtaaacgaa gatgcagcaa aatcgttgca atctaccacc 1140
aaccegeteg aaactatega caaageattg getaaagttg acaatetgeg ttetgacete 1200
ggtgcagtac aaaaccgttt cgactctgct atcaccaacc ttggcaacac cgtaaacaac 1260
ctgtcttctg cccgtagccg tatcgaagat gctgactacg cgaccgaagt gtctaacatg 1320
tctcgtgcgc agatcctgca acaagcgggt acctctgttc tggcgcag
<210> 14
<211> 1788
<212> DNA
<213> Escherichia coli
<400> 14
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
aaccagtetg egetgtegag ttetategag egtetgtett etggettgeg tattaacage 120
gcgaaggatg acgcagcggg tcaggcgatt gctaaccgtt tcacctctaa cattaaaggc 180
ctgactcagg cggcccgtaa cgccaacgac ggtatctccg ttgcgcagac caccgaaggc 240
gcgctgtccg aaatcaacaa caacttacag cgtatccgtg aactgacggt tcaggcttct 300
accgggacta actccgattc ggatctggac tccattcagg acgaaatcaa atcccgtctg 360
gacgaaattg accgcgtatc tggccagacc cagttcaacg gcgtgaacgt actggcgaaa 420
gacggttcaa tgaaaattca ggttggtgcg aatgacggcc agactatcac gattgatctg 480
aagaaaattg actcagatac gctggggctg aatggtttta acgtgaatgg ttccggtacg 540
atagccaata aagcggcgac cattagcgac ctgacagcag cgaaaatgga tgctgcaact 600
aatactataa ctacaacaaa taatgcgctg actgcatcaa aggcgcttga tcaactgaaa 660
gatggtgaca ctgttactat caaagcagat gctgctcaaa ctgccacggt ttatacatac 720
aatgcatcag ctggtaactt ctcattcagt aatgtatcga ataatacttc agcaaaagca 780
ggtgatgtag cagctagcct tctcccgccg gctgggcaaa ctgctagtgg tgtttataaa 840
gcagcaagcg gtgaagtgaa ctttgatgtt gatgcgaatg gtaaaatcac aatcggagga 900
cagaaagcat atttaactag tgatggtaac ttaactacaa acgatgctgg tggtgcgact 960
gcggctacgc ttgatggttt attcaagaaa gctggtgatg gtcaatcaat cgggtttaag 1020
aagactgcat cagtcacgat ggggggaaca acttataact ttaaaacggg tgctgatgct 1080
gatgctgcaa ctgctaacgc aggggtatcg ttcactgata cagctagcaa agaaaccgtt 1140
ttaaataaag tggctacagc taaacaaggc aaagcagttg cagctgacgg tgatacatcc 1200
gcaacaatta cctataaatc tggcgttcag acgtatcagg ctgtatttgc cgcaggtgac 1260
ggtactgcta gcgcaaaata tgccgataaa gctgacgttt ctaatgcaac agcaacatac 1320
```

```
actgatgctg atggtgaaat gactacaatt ggttcataca ccacgaagta ttcaatcgat 1380
 gctaacaacg gcaaggtaac tgttgattct ggaactggta cgggtaaata tgcgccgaaa 1440
 gtaggggctg aagtatatgt tagtgctaat ggtactttaa caacagatgc aactagcgaa 1500
 ggcacagtaa caaaagatcc actgaaagct ctggatgaag ctatcagctc catcgacaaa 1560
 ttccgttctt ccctgggtgc tatccagaac cgtctggatt ccgcagtcac caacctgaac 1620
 aacaccacta ccaacctgtc cgaagcgcag tcccgtattc aggacgccga ctatgcgacc 1680
 gaagtgteea acatgtegaa agegeagate atteageagg eeggtaaete egtgetggea 1740
 aaagccaacc aggtaccgca gcaggttctg tctctgctgc agggttaa
 <210> 15
 <211> 1653
 <212> DNA
 <213> Escherichia coli
 <400> 15
 atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
 aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
 gcgaaggatg acgccgcagg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
 ctgactcagg ctgcacgtaa cgccaacgac ggtatttccg ttgcgcagac cactgaaggt 240
 gcgctgtccg aaatcaacaa caacttacag cgtattcgtg agctgacggt tcaggcttct 300
 accgggacta actccgattc tgacctggac tccatccagg acgaaatcaa gtctcgtctg 360
 gacgaaattg accgegtate eggteagace cagtteaacg gegtgaaegt getggegaaa 420
gacggttcga tgaaaattca ggttggtgcg aatgacggcc agactatcac gattgatctg 480
 aagaaaattg actcagatac gctggggctg agtgggttta atgtgaatgg tggcggggct 540
gttgctaaca ctgctgcatc taaagctgac ttggtagctg ctaatgcaac tgtggtaggc 600
aacaaatata ctgtgagtgc gggttacgat gctgctaaag cgtctgattt gctggctgga 660
gttagtgatg gtgatactgt tcaggcaacc attaataacg gcttcggaac ggcggctagt 720
gcaacgaatt acaagtatga cagtgcaagt aagtcttact cttttgatac cacaacggct 780
tcagctgccg atgttcagaa atatttgacc ccgggcgttg gtgataccgc taagggcact 840
attactatcg atggttctgc acaggatgtt cagatcagca gtgatggtaa aattacgtca 900
agcaatggag ataaacttta cattgataca actgggcgct taacgaaaaa cggctttagt 960
gcttctttga ctgaggctag tctgtccaca cttgcagcca ataataccaa agcgacaacc 1020
attgacattg gcggtacctc tatctccttt accggtaata gtactacgcc gaacactatt 1080
acttattcag taacaggtgc aaaagttgat caggcagctt tcgataaagc tgtatcaacc 1140
tctggaaacg atgttgattt cactaccgca ggttatagcg tcgacggcgc aactggcgct 1200
gtaacaaaag gtgttgctcc ggtttatatt gataacaacg gggcgttgac cacatctgat 1260
actgtagatt tttatctaca ggatgatggt tcagtgacta acggcagcgg taaggcagtt 1320
tataaagatg ctgacggtaa attgacgaca gatgctgaaa ctaaagctgc aaccaccgcc 1380
gateceetga aagetetgga egaageeate ageteeateg acaaatteeg eteeteeete 1440
ggtgcggtgc agaaccgtct ggattccgcg gtcaccaacc tgaacaacac cactaccaac 1500
ctgtctgaag cgcagtcccg tattcaggac gctgactatg cgaccgaagt atccaacatg 1560
tegaaagege agateateea geaggeeggt aacteegtge tggeaaaage taaccaggta 1620
ccacagcagg ttctgtctct gctgcagggt taa
                                                                   1653
<210> 16
<211> 1689
<212> DNA
<213> Escherichia coli
<400> 16
atggcacaag tcattaatac caacageete tegetgatea etcaaaataa tatcaacaag 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgccgcagg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcacagac cactgaaggc 240
gcgctgtccg aaatcaacaa caacttacag cgtgtgcgtg aactgaccgt tcaggcaacc 300
accggtacca actcccagtc tgacctggac tctatccagg acgaaattaa atcccgtctg 360
gacgaaattg atcgcgtatc cggtcagacc cagttcaacg gcgtgaacgt gctggcaaaa 420
gacggttcca tgaaaattca ggttggcgcg aacgatggcc agaccatcac tatcgacctg 480
aagaagattg actettetae ettgaacetg acaggtttta aegttaaegg ttetggttet 540
gtggcgaata ctgcagcaac taaagctgat ttaaccgctg ctcaactctc tgcaccgggt 600
gcagcagacg caaatggtac agttacttat actgtcagtg ctggttataa agaatccact 660
gctgcagatg ttattgctag catcaaagac ggcagtgctc cgacttctgc aattactgca 720
accattaata atggettegg tgattecagt gegetgaett ecaatgaeta taettatgae 780
ccagcaaaag gcgacttcac ttacgacgta gcttcaagcg ccaataatac tgctgcccag 840
gttcagtcct tcctgacgcc gaaagcaggt gataccgcaa atctgaaagt aaccgttggt 900
```

```
acgacategg ttgatgtegt tetggeeagt gatggtaaga ttacagcaaa agatggttet 960
 gcattatata tcgacagtac aggtaacctg actcagaaca gtgctggctt gacctctgct 1020
 aaactggcta ctctgactgg ccttcagggc tctggtgttg cttcaaccat cactactgaa 1080
 gatggcacta atattgatat tgctgctaac ggtaatattg gtctgaccgg tgttcgtatc 1140
 agtgctgatt ctctgcagtc agcgactaaa tctacgggct ttactgttgg tactggcgct 1200
 acaggtetga eegtaggtac tgatggtaaa gtgaetateg gegggaetae tgeteagtee 1260
 tacaccagca aagatggttc cctgactact gataacacca ctaaactgta tctgcagaaa 1320
 gatggctctg taaccaacgg ttcaggtaaa gcggtctatg tagaagcgga tggtgatttc 1380
 actaccgacg ctgcaaccaa agccgcaacc accaccgatc cgctgaaagc cctggatgag 1440
 gcaatcagcc agatcgataa gttccgttca tccctgggtg ctatccagaa ccgtctggat 1500
 teegeggtea ecaacetgaa caacaceaet accaacetgt etgaagegea gteeegtatt 1560
 caggacgccg actatgcgac cgaagtgtcc aacatgtcga aagcgcagat cattcagcag 1620
 gccggtaact ccgtgctggc aaaagccaac caggtaccgc aacaggttct gtctctgctg 1680
 cagggctaa
                                                                   1689
 <210> 17
 <211> 915
 <212> DNA
 <213> Escherichia coli
 <400> 17
gcgctgtcga cttctatcga gcgcctctct tctggtctgc gtattaacag cgctaaagat 60
gacgctgcgg gccaggcgat tgctaaccgc ttcacttcta acatcaaagg tctgactcag 120
gccgcacgta acgccaacga cggtatttct ctggcgcaga cggctgaagg cgcgctgtca 180
gagattaaca acaacttgca gcgtattcgt gaactgaccg ttcaggcctc taccggcacg 240
aactctgatt ccgacctgtc ttctattcag gacgaaatca aatcccgtct tgatgaaatt 300
gaccgtgtat ctggtcagac ccagttcaac ggtgtgaacg tgctgtcgaa aaacgattcg 360
atgaagattc agattggtgc caatgataac cagacgatca gcattggctt gcaacaaatc 420
gacagtacca ctttgaatct gaaaggattt accgtgtccg gcatggcgga tttcagcgcg 480
gcgaaactga cggctgctga tggtacagca attgctgctg cggatgtcaa ggatgctggg 540
ggtaaacaag tcaatttact gtcttacact gacaccgcgt ctaacagtac taaatatgcg 600
gtcgttgatt ctgcaaccgg taaatacatg gcagccactg tagtcattac cagtacggcg 660
gcggcggtaa ctgttggtgc aacggaagtg gcgggagccg ctacagccga accgttaaaa 720
gcactggatg ccgcaatcgc taaagtcgac aaattccgct cctccctcgg tgccgttcaa 780
aaccgtctgg attctgcggt caccaacctg aacaacacca ccaccaacct gtctgaagcg 840
cagtcccgta ttcaggacgc cgactatgcg accgaagtgt ccaacatgtc gaaagcgcag 900
attatccagc aggcg
                                                                   915
<210> 18
<211> 1665
<212> DNA
<213> Escherichia coli
<400> 18
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
aaccagtetg egetgtegag ttetategag egtetgtett etggettgeg tattaacage 120
gcgaaggatg acgccgcagg tcaggcgatt gctaaccgtt ttacttctaa tattaaaggc 180
ctgactcagg ctgcacgtaa cgccaatgac ggtatttctg ttgcacagac cactgaaggc 240
gcgctgtccg aaatcaacaa caacttacag cgtattcgtg aactgacggt tcaggccact 300
acagggacta acteegatte tgaeetggae teeateeagg acgaaateaa atetegtetg 360
gacgaaattg accgcgtatc cggtcagacc cagttcaacg gcgtgaacgt gctgtccaaa 420
gatggttcaa tgaaaattca ggtcggcgca aatgatggtg aaaccatcac gattgatctg 480
aagaaaattg actctgatac gctgaatctg gctggtttta acgtgaatgg cgaaggtgaa 540
acagccaata ctgctgcaac acttaaagat atggttggtt taaaactcga taatacgggg 600
gtcactacag ctggagttaa tagatatatt gctgacaaag ccgtcgcaag tagcacggat 660
attttgaatg cggtagctgg tgttgatggc agtaaagttt ccacggaggc agatgttggt 720
tttggtgcag ctgcccctgg tacgccagtg gaatatactt atcataaaga tactaacaca 780
tatacggctt ctgcttcagt tgatgcgact caactggcgg cattcctgaa tcctgaagcg 840
ggtggtacca ctgctgcaac agtaagtatt ggcaacggta caacagctca agagcaaaaa 900
gtcattattg ctaaagatgg ttctttaact gctgctgatg acggtgccgc tctctatctt 960
gatgatactg gtaacttaag taaaactaac gcaggcactg atactcaagc taaactgtct 1020
gacttaatgg caaacaatgc taatgccaaa acagtcatta caacagataa aggtacattt 1080
actgctaata cgacaaagtt tgatggggta gatatttctg ttgatgcttc aacgtttgct 1140
aacgccgtta aaaatgagac ttacactgca actgttggtg taactttacc tgcgacatat 1200
acagtcaata atggcactgc tgcatcagcg tatttagtcg atggaaaagt gagcaaaact 1260
```

```
cctgccgagt attttgctca agctgatggc actattacta gtggtgaaaa tgcggctacc 1320
agtaaagcta totatgtaag tgccaatggt aacttaacga ctaatacaac tagtgaatot 1380
gaagctacta ccaacccgct ggcagcattg gatgacgcta tcgcgtctat cgacaaattc 1440
cgttcttccc tgggtgctat ccagaaccgt ctggattccg cagtcaccaa cctgaacaac 1500
accactacca acctgtctga agcgcagtcc cgtattcagg acgccgacta tgcgaccgaa 1560
gtgtccaaca tgtcgaaagc gcagatcatt cagcaggccg gtaactccgt gctggcaaaa 1620
gccaaccagg taccgcagca ggttctgtct ctgctgcagg gttaa
<210> 19
<211> 1842
<212> DNA
<213> Escherichia coli
<400> 19
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaaataa tatcaacaag 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgccgcagg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcgcagac cactgaaggc 240
gegetgteeg aaattaacaa caacttacag egtattegtg aactgaeggt teaggegaeg 300
accggaacta actecacete tgacetggae tecatecagg acgaaateaa atecegtett 360
gacgaaattg accgcgtatc tggtcagacc cagttcaacg gcgtgaacgt gctgtctaaa 420
gatggctcga tgaaaattca ggtcggcgcg aacgatggcg aaacgattac tattgatctg 480
aagaaaattg actctgatac gctgaatctg gctggtttta acgttaacgg taaaggttct 540
gtagcgaata ccgctgcgac tacagataat ctgacattgg ctggttttac agcgggtact 600
aaagetgetg atggeacegt aacttatage aaaaatgtee agtttgeege egegaetgea 660
agcaatgtac tggctgctgc taaagatggc gacgaaatta cgttcgctgg taataacggc 720
acaggtatag ctgcaactgg ggggacttat acttatcata aggactctaa ctcatacagc 780
tttagcgcaa cggctgcatc taaagattct ctgttgagca cactggcacc aaacgctggc 840
gatacattta ccgctaaagt gactattggt tctaaatcgc aagaagttaa cgttagcaaa 900
gatggtacga ttacatccag cgatggtaag gcgctgtatt tagatgagaa gggcaacctg 960
acccaaacag gtagtggcac aaccaaagct gcaacctggg ataacctgat ggccaataca 1020
gatactacag gcaaagatgc ctatggtaac tctgcggcag cagctgttgg gacagtaatc 1080
gaagcaaaag gaatgaccat cacttctgct ggtggtaatg ctcaggtgtt aaaaqacqcq 1140
gettataatg eegeatatge gaceteaatt actaetggta eteegggtga tgegggagee 1200
gcgggagccg ctgcaactgc gggtaatgcc gcggtgggag cgctgggcgc aacggcagtt 1260 gataatacca cggcagatgt tgccgatatc tctatctcag cttcgcaaat ggcgagcatc 1320
cttcaggata aagatttcac cttaagtgat ggtagtgata cttacaacgt gaccagcaat 1380
gctgtcacta tcaatggcaa agcagcaaac attgatgaca gcggcgcaat cacagaccaa 1440
accagtaaag ttgtcaatta tttcgctcat actaacggta gcgtgactaa cgatacaggc 1500
tccactattt atgcgacaga agatggtagc ctgaccaccg atgcagcaac caaagccgaa 1560
accaccgccg atcccctgaa agctctggac gaagccatca gctccatcga caaattccgc 1620
tecteceteg gtgeggtgea aaacegtetg gatteegegg teaceaacet gaacaacace 1680
accaccaacc tgtctgaagc gcagtcccgt attcaggacg ccgactatgc gaccgaaqtg 1740
tecaacatgt egaaagegea gattateeag eaggeeggta acteegtget ggeaaaaget 1800
aaccaggtac cacagcaggt tetgtetetg etgcagggtt aa
                                                                    1842
<210> 20
<211> 1731
<212> DNA
<213> Escherichia coli
<400> 20
atggcacaag tcattaatac caacagcete tegetgatea etcaaaataa tatcaacaag 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgccgcagg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg cggcccgtaa cgccaacgac ggtatttctg ttgcgcagac caccqaaqqc 240
gcgctgtccg aaattaacaa caacttacag cgtgtgcgtg agctgactgt tcaggcgacc 300
accggtacca acteccagte tgatetggae tetatecagg acgaaateaa atcecgtetg 360
gacgaaattg accgcgtatc cggtcagacc cagttcaacg gcgtgaacgt gctggcaaaa 420
gacggttcca tgaaaattca ggttggcgcg aatgatggcc agaccatcac tatcgacctg 480
aagaagattg actettetae gttgaaactg actggtttta acgtgaatgg ttetggttet 540
gtggcgaata ctgcggcgac taaagcggat ttggctgctg ctgcaattgg tacccctggg 600
gcagcagatt ctacaggtgc cattgcttac acagtaagtg ctgggctgac taaaactaca 660
gccgcagatg tactgtctag cctcgctgat ggtacgacta ttacagccac aggcgtgaaa 720
aatggctttg ctgcaggagc cacttccaat gcctataaac ttaacaaaga taataataca 780
```

```
tttacttatg acacgactgc tacgacagct gagctgcagt cttacctgac tccqaaaqcq 840
ggcgacactg caacattcag tgttgaaatt ggtggtacta cacaagacgt cgtgctgtcc 900
agtgatggca aactcactgc taaggatggc tctaagcttt acattgatac aactggtaat 960
ttaactcaga atggtggtaa taacggtgtt ggaacactcg cggaagcgac tctgagtggt 1020
ttagetetga acaaaaatgg tttaaegget gttaaateea caattaetae agetgataac 1080
acttcgattg tactgaatgg ttcaagcgat ggtactggta atgctggtac tgaaggtacg 1140
attgctgtta caggcgctgt aattagttca gctgctctgc aatctgcaag caaaacgact 1200
ggtttcactg ttggtacagt agacacagct ggttatatct ctgtaggtac tgatgggagt 1260
gttcaggcat atgatgctgc gacttctggc aacaaagctt cttacaccaa cactgacggt 1320
acactgacta ctgataacac cactaaactg tatctgcaga aagatggctc tgtaaccaac 1380
ggttcaggta aagcggtcta tgtagaagcg gatggtgatt tcactaccga cgctgcaacc 1440
aaagccgcaa ccaccaccga tccgctggcc gctctggatg acgcaatcag ccagatcgac 1500
aagtteegtt cateettggg tgetateeag aacegtetgg attetgeagt caccaacetg 1560
aacaacacca ccaccaacct gtctgaagcg cagtcccgta ttcaggacgc cgactatgcg 1620
accgaagtgt ccaatatgtc gaaagcgcag atcatccagc aggccqqtaa ctccqtqctq 1680
gcaaaagcca accaggtacc gcagcaggtt ctgtctctgc tgcagggtta a
                                                                  1731
<210> 21
<211> 1380
<212> DNA
<213> Escherichia coli
<400> 21
aacaaatctc agtcttctct gagctccgcc attgaacgtc tctcttctgg cctgcgtatt 60
aacagtgcta aagatgacgc agcaggtcag gcgattgcta accgttttac aqcaaatatt 120
aaaggtctga ctcaggcttc ccgtaacgcg aatgatggta tttctgttgc gcagaccact 180
gaaggtgcgc tgaatgaaat taacaacaac ctgcagcgta ttcgtgaact ttctgttcag 240
gcaactaacg gtactaactc tgacagcgat ctttcttcta tccaggctga aattactcaa 300
cgtctggaag aaattgaccg tgtatctgag caaactcagt ttaacggcgt gaaagtcctt 360
gctgaaaata atgaaatgaa aattcaggtt ggtgctaatg atggtgaaac catcactatc 420
aatctggcaa aaattgatgc gaaaactctc ggcctggacg gttttaatat cgatggcgcg 480
cagaaagcaa ccggcagtga cctgatttct aaatttaaag cgacaggtac tgataattat 540
caaattaacg gtactgataa ctatactgtt aatgtagata gtggcgtagt acaggataaa 600
gatggcaaac aagtttatgt gagtactgcg gatggttcac ttacgaccag cagtgatact 660
caattcaaga ttgatgcaac taagcttgca gtggctgcta aagatttagc tcaagggaat 720
aagattgtct acgaaggtat cgaatttaca aataccggca ctgtcgctat agatgccaaa 780
ggtaatggta aattaaccgc caatgttgat ggtaaggctg ttgaattcac tatttcgggg 840
agtactgata catcaggtac tagtgcaacc gttgccccta cgacagccct atacaaaaat 900
agtgcagggc aattgactgc aacaaaagtt gaaaataaag cagcgacact atctgatctt 960
gatctgaacg ctgccaagaa aacaggaagc acgttagttg ttaacggtgc aacttacgat 1020
gttagtgcag atggtaaaac gataacggag actgcttctg gtaacaataa agtcatgtat 1080
ctgagcaaat cagaaggtgg tagcccgatt ctggtaaacg aagatgcagc aaaatcgttg 1140
caatctacca ccaacccgct cgaaactatc gacaaagcat tggctaaagt tgacaatctq 1200
cgttctgacc tcggtgcagt acaaaaccgt ttcgactctg ccatcaccaa ccttggcaac 1260
accgtaaaca acctgtcttc tgcccgtagc cgtatcgaag atgctgacta cgcgaccgaa 1320
```

```
<210> 22
<211> 1767
<212> DNA
<213> Escherichia coli

<400> 22
atggcacaag tcattaatac caacagcete tegetgatea etcaaaataa tatcaacaag 60
aaccagtetg egetgtegag ttetategag egetgtett etggettgeg tattaacage 120
gegaaggatg acgeagegg teaggegatt getaacegtt ttaettetaa eattaaagge 180
etgaeteagg eggeacgtaa egeeaacgae ggtatetete tggegeagae eacegaaggt 240
gegetgtetg aaatcaacaa eaacttacag egtgtaeegtg aactgaeegt teaggeaace 300
```

gtgtctaaca tgtctcgtgc gcagatcctg caacaagcgg gtacctctgt tctggcacag 1380

```
accggtacta actecgacte egacetgget tetatteagg acgaaateaa atecegtetg 360
 gatgaaattg accgcgtatc tggtcagact cagttcaacg gcgtgaacgt gctggcaaaa 420
 gacggttcca tgaaaattca ggtaggtgct aacgacggcc agactatcac tattgacctg 480
 aaaaaaatcg actctgatac tctgggcctg aatggtttta acgtgaatgg ttctgggacg 540
 attaccaaca aagcagcaac tgtcagtgat gttactcgcg caggcggtac attggtgaat 600
 ggtgcctatg atataaaaac cactaacaca gcgctgacta caactgatgc cttcgcgaaa 660
 ttgaatgatg gtgatgttgt tactatcaat aatggtaagg atactgccta taaatataat 720
 gctgctacag gtgggtttac gacggatgtc tccatctccg gggatcctac cgctgctgac 780
 gctactgcta ataaaactgc ccgtgatgca cttgcggcgt ctttacatgc tgagccgggt 840
 aaaactgtta atggttcttg gactacgaat gatggtacgg taaaatttga taccgatgcc 900
 gatggtaaga tttctattgg tggtgttgct gcttatgtag atgcagcagg caacctgacc 960
 actaacgcag caggtatgac gactcaagca acaactaccg atttggttac tgctgctgca 1020
 tctgctactg gtaagggtgg atccctgacc tttggtgaca cgacgtataa aattggtcag 1080
 ggtacggctg gggttgatcc tgatgacgct tcagatgatg tactgggcac catttcttac 1140
 tctaaatcag taagcaagga tgttgttctt gctgatacta aagcaactgg taacacgaca 1200
 acagttgatt tcaactccgg tatcatgact tcaaaggtta gtttcgatgc aggtacatca 1260
 actgatacat tcaaagatgc agatggtgct atcaccaaaa ctaaagaata caccacttct 1320
 tatgctgtaa ataaagatac tggtgaagtt accgttgctg attatgctgc ggtagatagc 1380
 gccgataagg ctgttgatga tactaaatat aaaccgacta tcggcgcgac agttaacctg 1440
 aattotgoag gtaaattgac cactgataco accagtgoag gcacagcaac caaagatoot 1500
 ctggctgccc tggacgctgc tatcagctcc atcgacaaat tccgttcatc cctgggtgct 1560
 atccagaacc gtctggattc cgcagtcacc aacctgaaca acaccactac caacctgtcc 1620
 gaagcgcagt cccgtattca ggacgccgac tatgcgaccg aagtgtccaa catgtcgaaa 1680
 gcgcagatta tccagcaggc cggtaactcc gtgctggcaa aagccaacca ggtaccgcag 1740
 caggttctgt ctctgctaca gggttaa
 <210> 23
 <211> 1383
 <212> DNA
 <213> Escherichia coli
<400> 23
aacaaaaacc agtctgcgct gtcgacttct atcgagcgcc tttcttctgg tctgcgtatt 60
aacagcgcta aagatgacgc tgcgggccag gcgattgcta accgcttcac ttctaacatc 120
aaaggtetga eteaggeege aegtaaegee aacgaeggta tttetetgge geagaeeaet 180
gaaggcgcgc tgtctgagat taacaacaac ttgcagcgtg tgcgtgagtt gactgtacag 240
gcgacgaccg ggactaactc tgattctgac ctgtcttcta tccaggatga aatcaaatcc 300
cgtttaagcg aaattgaccg tgtatctggt cagactcagt ttaacggcgt gaacgtactg 360
gctaagaatg acaccetgte tatteaggta ggtgcaaatg acggteagae tateaatatt 420
gacctgcagc aaatcgattc tcatacactg ggtctggatg gtttcagcgt taaaaataat 480
gatgcagtga aaaccagtgc tgccgtgaat actcttgggg ggggggcagg ttctgttgct 540
gtcgacttcg caacaaccag tttgactgct atcactggtc tcggtagcgg tgctatcagc 600
gaaattgcta aagacgataa tggtgattac tacgcgcatg tcacagggac tacgggtaat 660
actgctgatg gttactatgc tgtcgatatc gacaaggcta ccggtgaggt cgctctgaaa 720
gatggtaacg tagatacacc gacaggtacg ccaacgacga caagcacata tgacttcaca 780
gacgctggtc aaaccgtttc ctttggcact gatgctgcaa cagccggtat cagcactggt 840
gcttctctcg ttaaacttca ggatgagaaa ggcaatgata ctgctactta tgcaatcaaa 900
gcacaagatg gcagcctgta tgccgccaac gttgatgagg ctaccggtaa agtcactgtc 960
aaaaccgcca gctatactga tgctgacggc aaagcagtga ccgatgccgc tgtaaaactg 1020
ggtggtgaca atggcacaac cgaaattgtt gtcgatgctg cgtcaggtaa aacttacgat 1080
gctggtgcac tgcaaaacgt tgatctctcc agtgcaacca acacggtaac cgcaatcccg 1140
aacggtaaaa ccacgtctcc gctggctgcc cttgacgacg caatcagcca gatcgacaaa 1200
ttccgctcct ccctcggtgc ggtgcagaac cgtctggatt ccgcggtcac caacctgaac 1260
aacaccacta ccaacctgtc tgaagcgcag tcccgtattc aggacgctga ctatgcgacc 1320
gaagtateca acatgtegaa agegeagate atecageagg caggtaacte egtgetgtee 1380
aaa
<210> 24
<211> 1197
<212> DNA
<213> Escherichia coli
<400> 24
gcgctgtcga cttctatcga gcgcctctct tctggtctgc gcattaacag cgctaaagat 60
gacgetgegg gecaagegat tgetaacege tteaetteta acateaaagg tetgaeteag 120
gccgcacgta acgccaacga cggtatttct ctggcgcaga ccactgaagg cgcactgtct 180
gaaatcaaca acaacttgca gcgtgttcgt gaactgaccg ttcaggccac taccggtact 240
```

```
aactctgatt ctgacctgtc ttcaatacag gacgaaatca aatcccgtct cgatgaaatt 300
 gaccgcgtat ccggtcagac tcagttcaac ggcgttaatg ttctttccaa agatggttca 360
 atgaaaattc aggttggtgc gaatgatggt caaactatct ccatcgatct gaagaaaatt 420
 gattetteaa etttgggget gaatggette teagttteta aaaaetetet taatgteage 480
 aatgctatca catctatccc gcaagccgct agcaatgaac ctgttgatgt taacttcgqt 540
 gatactgatg agtctgcagc aatcgcagcc aaattggggg tttccgatac gtcaagcctg 600
 togotgoaca acatoottga taaagatggt aaggcaacag otgattatgt tgttoagtca 660
 ggtaaagact tetatgetge ttetgttaat geegetteag gtaaagtaae ettaaacace 720
 attgatgtta cttatgatga ttatgcgaac ggtgttgacg atgccaagca aacaggtcag 780
 ctgatcaaag tttcagcaga taaagacggc gcagctcaag gttttgtcac acttcaaggc 840
 aaaaactatt ctgctggtga tgcggcagac attcttaaga atggagcaac agctcttaag 900
 ttaactgatc tgaatttaag tgatgttact gatactaatg gtaaggtaac cacaactgcg 960
 actgagcaat tigaaggtgc ticaactgag gatccgctgg cgctictgga taaagctatt 1020
 gcatcagtcg acaaattccg gtcttctcta ggtgccgtgc agaaccgtct cgattccgct 1080
 atcaccaacc tgaacaacac caccaccaac ctgtctgaag cgcagtcccg tattcaggac 1140
 gccgactatg cgaccgaagt gtccaacatg tcgaaagcgc agatcatcca gcaggca
 <210> 25
 <211> 1674
 <212> DNA
 <213> Escherichia coli
 <400> 25
 atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
 aaccagtetg cgctgtcgag ttetatcgag cgtctgtett ctggettgeg tattaacage 120
 gcgaaggatg acgccgcagg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
 ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcacagac cactgaaggc 240
 gegetgteeg aaatcaacaa caacttacag egtattegtg aactgaeggt teaggecact 300
acagggacta actoogatto tgacotggao tocatocagg acgaaatcaa atotogtotg 360
 gacgaaattg accgcgtatc tggtcagacc cagttcaacg gcgtgaacgt gctgtctaaa 420
gatggctcga tgaaaattca ggtcggcgcg aacgatggcg aaacgattac tattgatctg 480
aagaaaattg actctgatac gctaaatctg gctggtttta acgtgaatgg tgctggctct 540
gttgataatg ccaaggcgac tggcaaagat cttactgatg ctggttttac ggcaagcgca 600
gctgatgcta atggcaaaat cacttatacc aaagacaccg ttactaaatt cgacaaagcg 660
acagcggctg atgtattggg caaagcggct gctggcgata gcattaccta tgcgggcact 720
gatactggct taggagtcgc tgctgatgcc tcgacttaca cctacaatgc agccaataag 780
tettacaett ttgatgetae tggtgttgee aaggeggatg etggaaegge aetgaaaggg 840
tacttaggcg catctaacac cggtaaaatt aatatcggtg gtaccgagca agaagttaac 900
attgccaaag atggctccat caccgatacc aatggcgatg cgctgtatct cgatagtacc 960
ggcaacttaa ccaaaaatac cgcgaatttg ggggctgctg ataaagcaac tgtagataaa 1020
ctgtttgctg gtgctcagga tgcaacgatc accttcgata gcggcatgac agctaaattc 1080
gatcaaactg ctggtaccgt tgatttcaaa ggcgcgtcta tttctgctga tgcaatggca 1140
tcaaccttaa ataatggttc ctatacagcc aacgtaggtg gtaaggctta tgccgtaacc 1200
gctggcgcag ttcagacagg tggcgcagat gtgtataaag ataccactgg cgcactgacg 1260
actgaagatg acgaaaccgt taccgcgacc tactacggtt ttgctgatgg taaagtttct 1320
gacggtgaag gttctactgt ctataaagct gctgatggtt ccatcactaa agatgcgact 1380
accaagtetg aagcaaccae tgaccetetg aaagceettg acgacgcaat cagccagate 1440
gacaaattcc gctcctccct cggtgccgtt caaaaccgtc tggattccgc cgtcaccaac 1500
ctgaacaaca ccactaccaa cctgtctgaa gcgcagtccc gtattcagga cgccgactat 1560
gcgaccgaag tgtccaacat gtcgaaagcg cagatcattc agcaggccgg taactccgtg 1620
ctggcaaaag ccaaccaggt accgcagcag gttctgtctc tgctgcaggg ttaa
<210> 26
<211> 1365
<212> DNA
<213> Escherichia coli
<400> 26
aacaaatctc agtcttctct tagctctgct attgagcgtc tctcttctgg cctgcgtatt 60
aacagtgcta aagatgacgc agcaggtcag gcgattgcta accgttttac ggcaaatatt 120
aaaggtetga eteaggette eegtaaegeg aatgatggta tttetgttge geagactaet 180
gaaggtgcgc tgaatgaaat taacaacaac ctgcagcgtg tacgtgaact gactgttcag 240
gcaactaacg gtactaactc tgacagcgat ctttcttcta ttcaggcaga aattactcaa 300
cgtctggaag aaattgaccg tgtatctgag caaactcagt ttaacggcgt gaaagtcctt 360
gccgaaaata atgaaatgaa aattcaggtt ggtgctaatg atggggaaac catcactatc 420
aatetggcaa aaattgatge gaaaaetete ggeetggaeg getttaatat egatggegeg 480
cagaaagcaa ctggcagtga cctgatttct aaatttaaag cgacaggtac tgataattat 540
```

```
caaattaacg gtactgataa ctatactgtt aatgtagata gtggagcagt tcaaaatgag 600
gatggtgacg caatttttgt tagcgctacc gatggttctc tgactactaa gagtgataca 660
aaagtcggtg gtacaggtat tgatgcgact gggcttgcaa aagccgcagt ttctttagct 720
aaagatgcct caattaaata ccaaggtatt actttcacca acaaaggcac tgatgcattt 780
gatggcagtg gtaacggcac tctaaccgct aatattgatg gcaaagatgt aacctttact 840
attgatgcga cagggaagga cgcaacatta aaaacgtctg atcctgttta caaaaatagt 900
gcaggtcagt tcactacaac taaggttgaa aacaaagccg ctacagcatc ggatctggac 960
ttaaataacg ctaaaaaagt gggtagttct ttagttgtaa atggcgctga ttatgaagtt 1020
agcgctgatg gtaagacagt aactgggctt ggcaaaacta tgtatctgag caaatcagaa 1080
ggtggtagcc cgattctggt aaaagaagat gcagcaaaat cgttgcaatc tactaccaac 1140
cegetegaaa ceategaeaa ggeattgget aaagttgaea atetgegtte tgaeeteggt 1200
gcagtacaaa accgtttcga ctctgctatc accaaccttg gcaacaccgt aaacaacctg 1260
tettetgeee gtageegtat egaagatget gaetaegega eegaagtgte taacatgtet 1320
cgtgcgcaga tcctgcaaca agcgggtacc tctgttctgg cgcag
<210> 27
<211> 1740
<212> DNA
<213> Escherichia coli
<400> 27
atggcacaag tcattaatac caacagcctc tcqctqatca ctcaaaaataa tatcaacaaq 60
aaccagtetg egetgtegag ttetategag egtetgtett etggettgeg tattaacage 120
gcgaaggatg acgccgcagg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgat ggtatttctg ttgcacagac cactqaaggc 240
gcgctgtccg aaatcaacaa caacttacag cgtatccgtg aactgacggt tcaggcttct 300
accgggacta actccgattc ggatctggac tccattcagg acgaaatcaa atcccgtctg 360
gacgaaattg accgcgtatc tggccagacc cagttcaacg gcgtgaacgt actggcgaaa 420
gacggttcaa tgaaaattca ggttggtgcg aatgacggcc agactatcac gattgatctg 480
aagaaaattg actctgatac gctggggctg agtgggttta atgtgaatgg tagcggggct 540
gtggctaata ctgcagcgac taaatctgat ttggcagcag ctcaactctt ggctccaggt 600
actgctgatg ctaatggtac agttacctat actgttggcg caggcctgaa aacatctaca 660
gctgcagatg taattgcgag tttggctaat aacgcaaaag ttaatgccac aattgcaaat 720
ggttttggat cgccaacagc tacagattat acatacaaca gcgctacagg cgattttaca 780
tatagtgcaa ctattgcagc tggtacaaat tctggtgata gtaacagtgc tcagttacaa 840
teetteetga caccaaaage gggegataet getaacttaa aegttaaaat tggttetaeg 900
tcaattgacg ttgtattggc tagcgacggt aaaattaccg cgaaagatgg ttcagaacta 960
tttattgacg tagatggtaa cctcactcaa aacaatgctg ggactgtcaa agcagccact 1020
cttgatgcac tgactaaaaa ctggcataca acaggcacac cgagtgccgt atctacggta 1080
attacaactg aagatgaaac aacetteact ctggetggeg gtactgatge tactacttet 1140
ggtgcaatca ctgtagcaaa tgcaagaatg agtgctgagt ctcttcaatc ggcaactaag 1200
tccacaggat tcacagttga tgttggagct actggtacca gcgcaggcga tattaaagtt 1260
gatagtaaag gtatagtaca acaacacaca ggtacaggtt ttgaagacgc ttacaccaaa 1320
gctgatggtt cactgactac cgataataca accaatctgt ttttgcaaaa agacggaact 1380
gtgaccaatg gttcaggtaa agcagtctat gtttcagcgg atggtaattt tactactgac 1440
gctgaaacta aagctgcaac caccgccgat ccactgaaag ctctggacga agcgatcagc 1500
tecategaca aatteegtte tteeeteggt geggtgeaaa acegtetgga tteegeagte 1560
accaacctga acaacaccac tactaacctg tctgaagcgc agtcccgtat tcaggacgct 1620
gactatgcga ccgaagtgtc caatatgtcg aaagcgcaga tcatccagca ggccqqtaac 1680
tccgtgctgg caaaagctaa ccaggtaccg cagcaggttc tgtctctgct gcagggttaa 1740
<210> 28
<211> 1233
<212> DNA
<213> Escherichia coli
<400> 28
aacaaaaacc agtctgcgct gtcgacttct atcgagcgcc tctcttctgg tctgcgcatt 60
aacagcgcta aagatgacgc tgcgggccag gcgattgcta accgcttcac ttctaacatc 120
aaaggtetga eteaggeege aegtaaegee aaegaeggta tetetetgge geagaeeaet 180
gaaggcgcac tgtctgaaat caacaacaac ttgcagcgtg ttcgtgagct gaccgttcag 240
gccactaceg gtactaacte tgattetgae etgtetteaa teeaggaega aatcaaatee 300
cgtctcgatg aaattgaccg cgtatccggt cagactcagt tcaacggcgt gaacgtactg 360
gcaaaagata acaccatgaa gattcaggtt ggtgcgaacg atggtcagac tatatccatc 420
gacctgcaaa aaatcgactc ttctactctt ggtttgaacg gtttctccgt ttctaaaaat 480
gctctcgaaa ctagcgaagc gatcactcag ttgccgaacg gtgcgaatgc accaatcgct 540
```

```
gtgaagatgg atgcgtctgt tctgaccgat cttaacatta ctgatgcttc cgctgtttcg 600
 ctgcacaacg taactaaagg tggtgtcgca acgtctactt atgttgttca gtatggcgat 660
 aagagctatg cagcatctgt tgatgcggga ggtacagtaa aactgaataa agccgacgta 720
 acatataacg acgcagcaaa tggtgttacg aatgccaccc agattggtag tctggttcag 780
 gttggtgctg atgcaaacaa tgatgcagtt ggttttgtta ccgtgcaggg gaaaaactat 840
 gttgctaatg actcattagt caatgctaat ggcgctgctg gcgctgcagc aactagagtt 900
 acaattgatg gtgatggtag ccttggagct aaccaggcta aaattgaact tagccaaaat 960
 ggtgctactg ctgcaacatc agagttcgct ggtgcttcaa ccaacgatcc actgactctg 1020
 ctggacaaag ctatcgcatc tgttgataaa ttccgttctt ctttgggggc ggtacagaac 1080
 cgtctgagct ccgctgtaac caacctgaac aacaccacta ccaacctgtc tgaagcgcag 1140
 tecegtatte aggacgeega etatgegace gaagtgteea acatgtegaa agegeagate 1200
 atccagcagg caggtaactc cgtgctgtcc aaa
 <210> 29
 <211> 1713
 <212> DNA
 <213> Escherichia coli
 <400> 29
 atggcacaag tcattaatac caacagcete tegetgatea eteaaaataa tatcaacaag 60
 aaccagtetg egetgtegag ttetategag egtetgtett etggettgeg tattaacage 120
gcgaaggatg acgccgcagg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcacagac cactgaaggc 240
gcgctgtccg aaatcaacaa caacttacag cgtattcgtg aactgacggt tcaggcgacg 300
accggaacta actccacctc tgacctggac tccattcagg acgaaatcaa atcccgtctt 360
gatgaaattg accgcgtatc cggccaaacc cagttcaacg gcgtgaacgt actgtcaaaa 420
gatggctcga tgaaaattca ggtcggcgca aatgatggtg aaaccatcac gattgatctg 480
aaaaagatcg actettetae attgaagetg accagettea atgttaaegg taaaggeget 540
gttgataatg ctaaagccac tgaagcagat ctgaccgctg cgggcttctc ccaaggtgca 600
gtcgtcagtg gcaacagcac ctggactaaa tctactgtta ctacctttaa tgcagcaaca 660
gctaccgacg tgctggcaag cgttagcggc ggcagcacta ttagcggtta taccggtaca 720
aacaatggat taggcgtagc ggcttctact gcatatacct acaacgcaac cagcaagtct 780
tattcatttg acgcaaccgc acttaccaat ggcgatggta ctggggccac cactaaagtt 840
gctgatgtgc tgaaagccta tgcagcaaac ggtgataata cggctcagat ctccatcggc 900
ggaagcgctc aggacgttaa aattgccagc gatggcaccc tgactgacgt caatggtgat 960
gctttatata ttggttctga cggcaacctg actaaaaacc aggccggcgg tccagatgcg 1020
gcaacgttgg acggtatttt caacggtgcg aatggtaatg cagcagttga tgcgaagatt 1080
acattcggca gcggcatgac cgttgatttc acccaggcta gcaaaaaagt ggatattaag 1140
ggcgcaacgg tatccgccga agatatggac actgcgttaa ctgggcaggc ttataccgta 1200
gctaacggcg cacagtcttt tgacgttgcc gctggtgggg cagtaaccgc tactacaggt 1260
ggcgctaccg taaatattgg tgctgatggt gaactgacga ctgcgaccaa caagactgtc 1320
acagaaactt atcacgaatt tgctaacggc aatattctgg atgatgacgg cgcggctctg 1380
tacaaagcgg ctgacggttc tctgaccact gaagctactg gtaaatccga agtgaccacg 1440
gatccgctga aagcgctgga cgatgctatc gcatccgtag acaaattccg ctcctccctc 1500
ggtgcggtgc agaaccgtct ggattccgca gtcaccaacc tgaacaacac cactaccaac 1560
ctgtctgaag cgcagtcccg cattcaggac gccgactatg cgaccgaagt gtccaatatg 1620
tcgaaagcgc agatcatcca gcaggccggt aactccgtgc tggcaaaagc caaccaggta 1680
ccgcagcagg ttctgtctct gctgcagggt taa
<210> 30
<211> 1668
<212> DNA
<213> Escherichia coli
<400> 30
atggcacaag tcattaatac caacagcete tegetgatea etcaaaataa tatcaacaag 60
aaccagtetg egetgtegag ttetategag egtetgtett etggettgeg tattaacage 120
gctaaggatg acgccgcggg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcgcagac cactgaaggc 240
gegetgteeg aaateaacaa caacttacag egtateegtg aactgaeggt teaggettet 300
accgggacta actccgattc ggatctggac tccattcagg acgaaatcaa atcccgtctg 360
gacgaaattg accgcgtatc tggccagacc cagttcaacg gcgtgaacgt actggcgaaa 420
gacggttcaa tgaaaattca ggttggtgcg aatgacggcc agactatcac tattgatctg 480
aagaaaattg actcagatac gctggggctg agtgggttta atgtgaatgg tggcggggct 540
gttgctaata ctgcagcgac taaagatgat ttggtcgctg catcagtttc agctgcggta 600
ggtaatgaat acactgtctc tgctggcctg tcgaaatcaa ctgctgctga tgttattgct 660
agteteacag atggtgegae agtaactgeg getggtgtaa geaatggttt tgetgeaggg 720
```

```
gcaactggag atgcttataa attcaatcaa gcaaacaaca cttttactta caataccacc 780
 tcaacagcgg cagaactcca atcttacctc acgcctaagg cgggggatac cgcaactttc 840
 tccgttgaaa ttggtggcac caagcaggat gttgttctgg ctagtgatgg caaaatcaca 900
 gcaaaagacg ggtctaaact ttatattgac accacaggga atttaaccca aaacggtgga 960
ggtactttag aagaagctac cctcaatggc ttagctttca accactctgg tccagccgct 1020
gctgtacaat ctactattac tactgcggat ggaacttcaa tagttctagc aggttctggc 1080
gactttggaa caacaaaac tgctggggct attaatgtca caggagcagt gatcagtgct 1140
gatgcacttc tttccgccag taaagcgact gggtttactt ctggcactta taccgtaggt 1200
ttaactactg acaataccac aaaatattat ttacaagatg acgggtctgt aactaatggt 1320
tctggtaaag ctgtgtatgc tgatgcaaca ggaaaactaa ctactgacgc tgaaactaaa 1380
gccgaaacca ccgccgatec cctgaaagct ctggacgaag cgatcagctc catcgacaaa 1440
ttccgttctt ccctcggtgc ggtgcaaaac cgtctggatt ccgcggtcac caacctgaac 1500
aacaccacta ccaacctgtc cgaagcgcag tcccgtattc aggacgccga ctatgcgacc 1560
gaagtgtcca acatgtcgaa agcgcagatc atccagcagg ccggtaactc cgtgctggca 1620
aaagctaacc aggtaccgca gcaggttctg tctctgctgc agggttaa
<210> 31
<211> 1713
<212> DNA
<213> Escherichia coli
<400> 31
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgccgcggg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttccg ttgcgcagac caccgaaggc 240
gcgctgtccg aaatcaacaa caacttacag cgtatccgtg aactgacggt tcaggccact 300
accggtacta actecgatte tgacetggae tecatecagg acgaaateaa atetegtett 360
gatgaaattg accgcgtatc tggtcagacc cagttcaatg gcgtgaatgt gttgtccaaa 420
gacggttcaa tgaaaattca ggtgggcgca aatgatggtg aaaccatcac gattgacctg 480
aaaaaaatcg actcttctac actgaagctg accagcttca acgtcaacgg taaaggcgct 540
gttgataatg caaaagccac tgaagcagat ctgaccgctg cgggcttctc ccaaagtgca 600
gttgtcagtg gcaatagcac ctggactaaa tctactgtta ctacctttaa tgcagcaaca 660
gctaccgatg tgctggctag cgttagtggc ggcagcacta ttagcggtta tgctggcaca 720
aacaatgggt taggcgtagc ggcttctact gcatatacct acaacgcaac cagcaagtct 780
tattcatttg acgcaaccgc acttactaat ggtgatggta ctgcgggctc aactaaagtt 840
gctgatgttc tgaaagccta tgcagcaaac ggcgataaca cggctcagat ctccatcggt 900
ggtagcgctc aggaagttaa aattgccagc gatggtaccc tgacggatac taatggcgat 960
gctttataca ttggtgctga cggtaacctg acgaaaaacc aggccggcgg cccagccgcg 1020
gcaacgttgg acggtatttt caacggtgcg aatggtcatg atgcagttga tgcgaagatt 1080
accttcggca gcggcatgac cgttgacttc acccaggtta gcaacaatgt ggatattaag 1140
ggcgcgacgg tatccgccga agatatgaac actgcgttaa ccggtcaggc ttataccgta 1200
gctaacggcg cacagtetta tgacgttgcc gctgatggtg cagtaactgc tactacaggt 1260
ggagcgaccg taaatattgg tgctgagggt gaactgacga ctgcggccaa caagactgtc 1320
acagaaactt atcacgaatt tgctaacggc aatattctgg atgatgacgg cgcggctctg 1380
tataaagcgg ctgacggctc tctgaccact gaagctacag gtaaatctga agcgaccacg 1440
gateegetga aagegetgga egatgetate geateegtag acaaatteeg ttetteeetg 1500
ggtgccgtgc agaaccgtct ggattccgca gtcaccaacc tgaacaacac cactaccaac 1560
ctgtccgaag cgcagtcccg tattcaggac gccgactatg cgaccgaagt gtccaacatg 1620
togaaagogo agattattoa goaggoaggt aactoogtgo tggoaaaago taaccaggta 1680
ccgcagcagg ttctgtctct gctgcagggt taa
<210> 32
<211> 1188
<212> DNA
<213> Escherichia coli
<400> 32
aacaaaaacc agtctgcgct gtcgacttct atcgagcgcc tctcttctgg tctgcgcatt 60
aacagegeta aagatgaege tgegggeeag gegattgeta acegetteae ttetaacate 120
aaaggtetga eteaggeege aegtaaegee aaegaeggta tetetetgge geagaeeaet 180
gaaggcgcac tgtctgaaat caacaacaac ttgcagcgtg tgcgtgagtt gactgttcag 240
gcgacgaccg ggactaactc tgattctgac ctgtcttcta ttcaggacga aatcaaatcc 300
cgtctggatg aaattgaccg tgtttccggt cagacccagt tcaacggcgt gaacgtgctg 360
gctaaaaacg gttctatggc gattcaggtt ggcgcgaatg atgggcagac catcaacatc 420
gacctgcaga aaatcgactc ttctactctg ggcctgggcg gcttctccgt atctaacaat 480
```

```
gcactgaaac tgagcgattc tatcactcag gttggtgcga gtggttcact ggcagatgtg 540
 aaactgaget etgttgeete ggetetgggt gtagaegeaa geaetetgae tetgeacaae 600
gtacagaccc cagctggcgc agcaacagct aactatgttg tctcttctgg ttctgacaac 660
 tactcagtat ctgttgaaga tagctccggt acagttacgc tgaacaccac tgatataggt 720
 tataccgata ccgctaatgg cgttactacc ggttccatga ctggtaagta cgttaaagtt 780
ggagctgatg cattgggtgc tgctgtaggt tatgtcaccg tacagggaca aaacttcaaa 840
gctgatgctg gcgcgctggt taactccaag aatgctgctg gtagtcagaa tgttacttct 900
gcaattggcg atattgctaa taaagcgaat gctaacattt acactggaac ctcttctgca 960
gatccactgg ctctgctgga caaagctatc gcatctgttg ataaattccg ttcttctcta 1020
ggggcggtgc agaaccgtct gagctctgct gtaaccaacc tgaacaacac cactaccaac 1080
ctgtccgaag cgcagtcccg tattcaggac gccgactatg cgaccgaagt gtccaacatg 1140
 tegaaagege agateateea geaggegggt aacteegtge tgtetaaa
<210> 33
<211> 1638
<212> DNA
<213> Escherichia coli
<400> 33
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgccgccgg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaatgac ggtatttctg ttgcacagac cactgaaggc 240
gcgctgtccg aaatcaacaa caacttacag cgtattcgtg aactgacggt tcaggcttct 300
accgggacta actctgattc ggatctggac tccattcagg acgaaatcaa atcccgtctc 360
gacgaaattg accgcgtatc cggtcagacc cagttcaacg gcgtgaacgt actggcaaaa 420
gacggttcga tgaaaattca ggttggtgcg aacgacggcc agactatcac tattgatctg 480
aagaaaattg actctgatac gctggggctg agtgggttta acgtaaatgg tagcgcagat 540
aaggcaagtg tcgcggcgac agctgacgga atggttaaag acggatatat caaagggtta 600
acttcatctg acggcagcac tgcatatact aaaactacag caaatactgc agcaaaagga 660
tctgatattc ttgcggcgct taagactggc gataaaatta ccgcaacagg tgcaaatagc 720
cttgctgata atgcgacatc gacaacttat acttataatg caaccagcaa taccttctcc 780
tatacggctg acggtgtaaa ccaaacgaat gctgcagcaa atctcatacc tgcagcaggg 840
aaaacgacag ctgcatcagt tactattggt gggacagcac agaatgtaaa tattgatgat 900
tcgggcaata ttacttcaag tgatggcgat caactttatc tggattcaac aggtaacctg 960
actaaaaacc aggccggcaa cccgaaaaaa gcaaccgttt ctgggcttct cggaaatacg 1020
gatgcgaaag gtactgctgt taaaacaacc atcaagacag aggctggtgt aacagttaca 1080
gctgaaggta atacaggtac tgtaaaaatt gaaggtgcta ctgtttcagc atctgcattt 1140
acgggcattg catattccgc caacaccggt gggaatactt atgctgttgc cgcaaataat 1200
actacaaatg gtttcctggc gggggatgac ttaacccagg atgctcaaac tgtttcaacc 1260
tactactcgc aagccgatgg cacggtcacg aatagcgcag gcaaagaaat ctataaagac 1320
gctgatggtg tctacagcac agagaataaa acatcgaaga cgtccgatcc attggctgcg 1380
cttgacgacg caatcagctc catcgacaaa ttccgttcat ccttgggtgc tatccagaac 1440
cgtctggatt ccgcggtcac caacctgaac aacaccacta ccaacctgtc cgaagcgcag 1500
tcccgtattc aggacgccga ctatgcgacc gaagtgtcca acatgtcgaa agcgcagatc 1560
atccagcagg ccggtaactc cgtgctggca aaagctaacc aggtaccgca gcaggttctg 1620
tctctgctgc agggctaa
<210> 34
<211> 2145
<212> DNA
<213> Escherichia coli
<400> 34
aacaaatete agtettetet gageteegee attgaaegte tetettetgg eetgegtatt 60
aacagtgcta aagatgacgc agcaggtcag gcgattgcta accgttttac agcaaatatt 120
aaaggtetga eteaggette eegtaaegeg aatgatggta tttetgttge geagaeeaet 180
gaaggtgcgc tgaatgaaat taacaacaac ctgcagcgtg tacgtgaact gactgttcag 240
gcaactaacg gtactaactc tgacagcgat ctttcttcta tccaggctga aattactcaa 300
cgtctggaag aaattgaccg tgtatctgag caaactcagt ttaacggcgt gaaagtcctt 360
gctgaaaata atgaaatgaa aattcaggtt ggtgctaatg atggtgaaac catcactatc 420
aatctggcaa aaattgatgc gaaaactctc ggcctggacg gttttaatat cgatggcgcg 480
cagaaagcaa ctggcagtga cctgatttct aaatttaaag cgacaggtac tgataactat 540
gatgttggcg gtgatgctta tactgttaac gtagatagcg gagctgggta atgactccaa 600
cttattgata gtgttttatg ttcagataat gcccgatgac tttgtcatgc agctccaccg 660
attttgagaa cgacagcgac ttccgtccca gccgtgccag gtgctgcctc agattcaggt 720
```

```
tatgccgctc aattcgctgc gtatatcgct tgctgattac gtgcagcttt cccttcaggc 780
gggattcata cagcggccag ccatccgtca tccatatcac cacgtcaaag ggtgacagca 840
ggetcataag acgecceage gtegecatag tgegtteace gaataegtge geaacaaceg 900
tetteeggag cetgteatac gegtaaaaca gecagegetg gegegattta geecegaeat 960
agteceactg ttegtecatt teegegeaga egatgaegte actgeeegge tgtatgegeg 1020
aggttaccga ctgcggcctg agttttttaa gtgacgtaaa atcgtgttga ggccaacgcc 1080
cataatgogg gcagttgccc ggcatccaac gccattcatg gccatatcaa tgattttctg 1140
gtgcgtaccg ggttgagaag cggtgtaagt gaactgcagt tgccatgttt tacggcagtg 1200
agagcagaga tagcgctgat gtccggcggt gcttttgccg ttacgcacca ccccgtcagt 1260
agctgaacag gagggacagc tgatagaaac agaagccact ggagcacctc aaaaacacca 1320
tcatacacta aatcagtaag ttggcagcat taccgcggag ctgttaaaga tactacaggg 1380
aatgatattt ttgttagtgc agcagatggt tcactgacaa ctaaatctga cacaaacata 1440
gctggtacag ggattgatgc tacagcactc gcagcagcgg ctaagaataa agcacagaat 1500
gataaattca cgtttaatgg agttgaattc acaacaacaa ctgcagcgga tggcaatggg 1560
aatggtgtat attctgcaga aattgatggt aagtcagtga catttactgt gacagatgct 1620
gacaaaaaag cttctttgat tacgagtgag acagtttaca aaaatagcgc tggcctttat 1680
acgacaacca aagttgataa caaggctgcc acactttccg atcttgatct caatgcagct 1740
aagaaaacag gaagcacgtt agttgttaac ggtgcaactt acgatgttag tgcagatggt 1800
aaaacgataa cggagactgc ttctggtaac aataaagtca tgtatctgag caaatcagaa 1860
ggtggtagcc cgattctggt aaacgaagat gcagcaaaat cgttgcaatc taccaccaac 1920
ccgctcgaaa ctatcgacaa agcattggct aaagttgaca atctgcgttc tgacctcggt 1980
gcagtacaaa accgtttcga ctctgctatc accaaccttg gcaacaccgt aaacaacctg 2040
tettetgeee gtageegtat egaagatget gaetaegega eegaagtgte taacatgtet 2100
cgtgcgcaga tcctgcaaca agcgggtacc tctgttctgg cgcag
<210> 35
<211> 1587
<212> DNA
<213> Escherichia coli
<400> 35
aacaagaacc agtctgcgct gtcgagttct atcgagcgtc tgtcttctgg cttgcgtatt 60
aacagegega aggatgaege egeaggteag gegattgeta acegttttae ttetaacatt 120
aaaggcctga ctcaggctgc acgtaacgcc aacgacggta tttctgttgc gcagaccacc 180
gaaggcgcgc tgtccgaaat caacaacaac ttacagcgtg tgcgtgaact gaccgttcag 240
gcaaccaccg gtaccaactc ccagtctgac ctggactcta tccaggacga aattaaatcc 300
cgtctggacg aaattgaccg cgtatccggt cagacccagt tcaacggcgt gaacgtactg 360
gcaaaagacg gttccatgaa aattcaggtt ggcgcgaacg atggccagac catcactatc 420
gacctgaaga agattgactc ttctacgctg aaactgactg gttttaacgt gaatggcaaa 480
gcagcggttg ataatgctaa agcgacggat gcaaatctga ctaccgccgg ttttacacaa 540
ggcgttgtgg attcaaatgg taatagtact tggactaaat caactacgac taatttcgat 600
gcggcaactg cagtaaacgt actagcagca gttaaagatg gcagcacaat caattacacc 660
ggtactggta atggtttagg gattgctgca acaagtgctt atacatatca cgatagcact 720
aaatcctata cctttgattc tacgggggct gcagtagctg gtgccgcgtc cagcctgcaa 780
ggtacttttg gtacagatac gaatactgca aaaatcacca tcgatggttc tgctcaagaa 840
gtaaacatcg ctaaagatgg gaaaattact gatactgatg gtaaagcttt atatatcgat 900
tecaetggta atttgaetaa gaacggetet gataetttaa eteaggeaac attgaatgat 960
gtccttactg gtgctaattc agttgatgat acaaggattg acttcgatag cggcatgtct 1020
gtcacccttg ataaagtgaa cagcactgta gatatcactg gcgcatctat ttcagccgct 1080
gcaatgacta atgagttgac aggtaaggcc tataccgtag taaatggtgc agaatcttac 1140
gctgtagcta ctaataacac agtaaaaacg actgctgatg ctaaaaatgt ttatgttgat 1200
gctagtggta aattaactac tgatgacaaa gccactgtta cagaaactta tcatgaattt 1260
gegaatggea atatetatga tgataaagge getgetgttt atgeggegge ggatggttet 1320
ctgactacag aaactacaag taaatcagaa gctacagcta acccgctggc cgctctggac 1380
gacgcaatca gccagatcga caaattccgt tcatccctgg gtgctatcca gaaccgtctg 1440
gattccgcag tcaccaacct gaacaacacc actaccaatc tgtctgaagc gcagtcccgt 1500
attcaggacg ccgactatgc gaccgaagtg tccaatatgt cgaaagcgca gatcatccag 1560
caqqcaqqca actccqtqct ggcaaaa
                                                                  1587
<210> 36
<211> 1245
<212> DNA
<213> Escherichia coli
<400> 36
aacaaaaacc agtctgcgct gtcgacttct atcgagcgcc tctcttctgg tctgcgcatt 60
```

```
aaaggtetga eteaggeege aegtaaegee aaegaeggta tetetetgge geagaeeaet 180
gaaggcgcac tgtctgaaat caacaacaac ttgcagcgtg ttcgtgaact gaccgttcag 240
gccactaccg gtactaactc tgattctgac ctgtcttcaa tccaggacga aatcaaatcc 300
cgtctcgatg aaattgaccg cgtatccggt cagactcagt tcaacggcgt gaacgtactg 360
gcaaaagatg gctcgatgaa aattcaggtc ggtgcaaatg atggtcagac aatcagcatt 420
gatttgcaga agattgattc ttctacttta gggttaaatg gtttttctgt ttccaaaaat 480
gcagtatctg ttggtgatgc tattactcaa ttgcctggcg agacggcagc cgatgcacca 540
gtaaccatca agtttgatga ttcagtaaaa actgatttaa aactgaccga tgcttcaggg 600
ttaagtctgc ataacctcaa agatgaaaat ggtaatttaa ctaaccagta tgttgtacag 660
aatggcggaa aatcttacgc tgctacagtc gctgccaatg gtaatgttac gctgaacaaa 720
gcaaatgtaa cctacagcga tgtcgcaaac ggtattgata ccgcaacgca gtcaggccag 780
ttagttcagg ttggtgcaga ttctaccggt acgccaaaag cattcgtgtc tgtccaaggt 840
aaaagetttg geattgatga egeegeettg aagaataaca etggtgatge taeegetaet 900
caaccgggaa catctgggac aacagttgtc gcagcgtcaa ttcatctgag tacgggcaaa 960
aactctgtag acgctgatgt aacggcttcc actgaattca caggtgcttc aaccaacgat 1020
ccactgactc tgctggacaa agctatcgca tctgttgata aattccgttc ttctttgggg 1080
geggtacaga accepteteae etcegeteta accaacetea acaacaceae caccaacete 1140
tetgaagege agteeegtat teaggaegee gaetatgega eegaagtgte caacatgteg 1200
aaagcgcaga ttatccagca ggcaggtaac tccgtgctgt ccaaa
<210> 37
<211> 1185
<212> DNA
<213> Escherichia coli
<400> 37
aacaaaaacc agtotgogot gtogacttot atogagogoc totottotgg totgogoatt 60
aacagcgcta aagatgacgc tgcgggccag gcgattgcta accgcttcac ttctaacatc 120
aaaggtetga etcaggetge aegtaaegee aatgaeggta tttetetage aeagaeageg 180
gaaggcgcgc tgtcagagat taacaacaac ttgcagcgtg tgcgtgagtt gaccgtgcag 240
gcaaccactg gtaccaactc tgattccgat ctctcttcta ttcaggatga aattaaatct 300
cgtctggatg aaattgaccg cgtctctggt cagacccagt ttaacggcgt gaacgtactg 360
gctaaaaacg gttctatggc aattcaggtt ggcgcgaacg atggccagac tatctctatc 420
gacctgcaga aaatagactc ttctactctg ggtctgagcg gcttctctgt ttctcagaac 480
tecetgaaac tgagegatte tateactaeg ateggeaata etaetgetge ategaagaac 540
gtggacctga gcgcagtagc aactaaactg ggcgtgaatg caagcaccct gagcctgcac 600
gaagttcagg actctgctgg tgacggtact ggtaccttcg ttgtttcttc tggcagcgac 660
aactatgctg tgtctgtaga cgcggcctct ggtgcagtta acctgaacac cactgacgtc 720
acctatgatg acgctactaa tggtgttact ggcgcgactc agaacggtca gctgatcaaa 780
gtaacttctg acgccaacgg tgcagctgtt ggttacgtaa ccattcaggg taaaaactat 840
caggetggtg cgaccggtgt tgacgttctg gcgaacagcg gtgttgcagc tccaactaca 900
gctgttgata ccggtactct gcaactgagc ggtactggtg caactactga gctgaaaggt 960
actgcaactc agaacccact ggcactattg gacaaagcta tcgcttctgt tgataaattc 1020
cgttcttctc tgggtgcggt acagaatcgt ctgagctctg ctgtaaccaa cctgaataac 1080
accaccacta acctgtctga agcgcagtcc cgtattcagg atgccgacta tgcgaccgaa 1140
gtgtcaaata tgtctaaagc gcagatcgtt cagcaggccg gtaac
                                                                  1185
<210> 38
<211> 1383
<212> DNA
<213> Escherichia coli
<400> 38
aacaaatctc agtcttctct tagctctgct attgagcgtc tgtcttctgg tctgcgtatt 60
aacagcgcaa aagacgatgc agcaggtcag gcgattgcta accgttttac ggcaaatatt 120
aaaggtetga eeeaggette eegtaaegea aatgatggta tttetgttge geagaeeact 180
gaaggtgcgc tgaatgaaat taacaacaac ctgcagcgta ttcgtgaact ttctgttcag 240
gcaactaacg gtactaactc tgacagcgat ctttcttcta tccaggctga aattactcaa 300
cgtctggaag aaattgaccg tgtatctgag caaactcagt ttaacggcgt gaaagtcctt 360
gctgaaaata atgaaatgaa aattcaggtt ggtgctaatg atggtgaaac catcactatc 420
aatctggcaa aaattgatgc gaaaactctc ggcctggacg gttttaatat cgatggcgcg 480
cagaaagcaa caggcagtga cctgatttct aaatttaaag cgacaggtac tgataattat 540
gatgttggcg gtaaaactta taccgtgaat gtggagagcg gcgcggttaa gaatgatgct 600
aataaagatg tttttgtaag cgcagctgat ggatcgctga cgaccagtag tgatactaaa 660
gtatccgqtq aaaqtattqa tqcaacaqaa ctaqcqaaac ttqcaataaa attaqctqac 720
aaaggeteea ttgaatacaa gggeattaca tttactaaca acaetggege agagettgat 780
```

```
gacagtaatg cacccacggg tgccggcgca acaataacta cagacacagc tgtttacaaa 900
 aacagtgcgg gccagttcac cactacaaaa gtggaaaata aagccgcaac actctctgat 960
 ctggatctta atgcagccaa gaaaacaggt agcactttag ttgtaaatgg cgccacctac 1020
 aatgtcagcg cagatggtaa aacggtaact gatactactc ctggtgcccc taaagtgatg 1080
 tatctgagca aatcagaagg tggtagcccg attctggtaa acgaagatgc agcaaaatcg 1140
 ttgcaatcta ccaccaaccc gctcgaaact atcgacaagg cattggctaa agttgacaat 1200
 ctgcgttctg acctcggtgc agtacaaaac cgtttcgact ctgccatcac caaccttggc 1260
 aacaccgtaa acaacctgtc ttctgcccgt agccgtatcg aagatgctga ctacgcgacc 1320
 gaagtgtcta acatgtctcg tgcgcagatc ctgcaacaag cgggtacctc tgttctggcg 1380
 <210> 39
 <211> 1680
 <212> DNA
 <213> Escherichia coli
 <400> 39
 atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
 aaccagtetg egetgtegag ttetategag egtetgtett etggettgeg tattaacage 120
 gcgaaggatg acgccgcagg tcaggcgatt gctaaccgtt tcacctctaa cattaaaggc 180
 ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcacagac caccgaaggc 240
 gegetgteeg aaateaacaa caacttacag egtateegtg aactgaeggt teaggettet 300
 accgggacta actctgattc ggatctggac tccattcagg acgaaatcaa atcccgtctg 360
 gacgaaattg accgcgtatc cggccagacc cagttcaacg gcgtgaacgt gctggcgaaa 420
 gacggttcaa tgaaaattca ggttggtgcg aatgacggcc agactatcac tattgatctg 480
 aagaaaattg actotgatao totgggtttg agtggattta atgtgaatgg caaaggggot 540
 gtggctaacg caaaagcgac cgaagcagat ttaacggggg ctggtttctc tcaaggagcg 600
 gtggatacaa acggaaatag tacttggaca aaatcaacca ccaccaatta ctcagctgca 660
 acaactgctg acttgttatc gaccattaag gatggctcta ctgttacata tgcagggaca 720
gacaccggat taggggtcgc agcagcagga aattatactt atgatgcgaa cagtaaatct 780
tattccttca atgccaatgg tctgacgggc gcaaataccg caactgcact caaaggttac 840
ttggggacag gtgctaacac cgctaaaatt tctatcggtg gtacagagca ggaagtgaat 900
attgccaaag atggcactat tacagatacg aatggtgatg cgctctatct ggatattacc 960
ggcaacctga ctaagaacta tgcgggttca ccacctgcag caacgctgga taacgtatta 1020
getteegeaa etgtaaatge eactateaag tttgatageg gtatgaeggt tgattacaet 1080
gcaggtactg gcgcgaatat tacaggtgca tccatttctg cagatgacat ggccgcaaaa 1140
ctgagcggaa aggcgtacac tgttgccaat ggtgctgagt cttatgacgt tgctgcagtt 1200
acgggggctg taacaactac agcaggtaat tcacctgtgt atgccgatgc agacggtaaa 1260
ttaacgacga gtgccagtaa tacggttact cagacttatc acgagtttgc taatggtaac 1320
atttatgatg acaaaggete gteaetgtat aaagetgeag atggetetet gaettetgaa 1380
gctaaaggga aatctgaagc aaccgccgat cccctgaaag ctctggacga agccatcagc 1440
tecategaca aatteegete eteeeteggt geegtteaaa acegtetgga ttetgeggtg 1500
accaacctga acaacaccac taccaacctg tctgaagcgc agtcccgtat tcaggacgcc 1560
gactatgega eegaagtgte caatatgteg aaagegeaga teatecagea ggeeggtaae 1620
tccgtgttgg caaaagctaa ccaggtaccg cagcaggttc tgtctctgct gcagggttaa 1680
<210> 40
<211> 1146
<212> DNA
<213> Escherichia coli
<400> 40
gegetgtega ettetatega gegeetetet tetggtttge geattaacag egetaaagat 60
gacgctgcgg gccaggcgat tgctaaccgc ttcacttcta acatcaaagg tctgactcag 120
gccgcacgta acgccaacga cggtatctct ctggcgcaga ccactgaagg cgcactgtct 180
gaaatcaaca acaacttgca gcgtgttcgt gaactgaccg ttcaggccac taccggtact 240
aactctgatt ctgacctgtc ttcaatccag gacgaaatca aatcccgctt ggctgaaatc 300
gatcgtgtct ctggtcagac ccagttcaac ggcgtgaacg tgctggctaa aaacggttct 360
ctgaatattc aggttggcgc gaatgatggg cagaccatct ctatcgattt gcagaaaata 420
gactettetg ceettggttt aagtggtttt agtgttgeeg gtggggeget aaaattaage 480
gatacagtga cgcaggtcgg cgatggttca gccgcgccag ttaaagtgga tctggatgca 540
gcagcaacag atattggtac tgctttgggg caaaaggtta atgcaagttc tttaacgttg 600
cacaatatct tagacaaaga tggtgcggca actgagaact atgttgttag ctatggtagt 660
gataattacg ctgcatctgt tgcagatgac gggactgtaa ctcttaataa aacggatatt 720
acttattcag gcggtgatat taccggcgct accaaagatg atacgttgat taaagttgct 780
gctaattctg acggagaggc cgttggtttc gctaccgttc agggtaagaa ttatgaaatt 840
acagatggtg taaaaaacca gtccactgct gcaccaaccg atattgctca gaccattgat 900
```

```
ctggatacgg ctgatgaatt tactggggct tccactgctg atccactggc acttttagac 960
aaagctattg cacaggttga tacttteege tecteeeteg gtgeegttea aaaccgtetg 1020
gattccgcag tcaccaacct gaacaacact actaccaacc tgtctgaagc gcagtcccgt 1080
attcaggacg ccgactatgc gaccgaagtg tccaatatgt cgaaagcgca gatcatccag 1140
caggcc
<210> 41
<211> 1506
<212> DNA
<213> Escherichia coli
<400> 41
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
aaccagtetg egetgtegag ttetategag egtetgtett etggettgeg tattaacage 120
gcgaaggatg acgcagcggg tcaggcgatt gctaaccgtt ttacttctaa tattaaaggc 180
ctgactcagg ctgcacgtaa cgccaatgac ggtatttctc tggcgcagac cactgaaggc 240
gcactgtctg aaatcaacaa caacttgcag cgtgtgcgtg aactgaccgt acaggcgaca 300
accggaacga actccgaatc tgacctgtcc tctatccagg acgaaatcaa atcccgtctg 360
gaagagattg accgcgtatc cggccagact cagttcaacg gcgtgaatgt gctggcaaaa 420
gacggcacca tgaaaattca ggtaggcgcg aacgatggtc agactatctc tatcgatctg 480
aaaaaaatcg actcttcaac cctgggcctg accggttttg atgtttcgac gaaagcgaat 540
atttctacga cagcagtaac gggggcggca acgaccactt atgctgatag cgccgttgca 600
attgatatcg gaacggatat tagcggtatt gctgctgatg ctgcgttagg aacgatcaat 660
ttcgataata caacaggcaa gtactacgca cagattacca gtgcggccaa tccgggcctt 720
gatggtgctt atgaaatcca tgttaatgac gcggatggtt ccttcactgt agcagcgagt 780
gataaacaag cgggtgctgc tccgggtact gctctgacaa gcggtaaagt tcagactgca 840
accaccacge caggtacgge tgttgatgte actgeggeta aaactgetet ggetgeagea 900
ggtgctgaca cgagtggcct gaaactggtt caactgtcca acacggattc cgcaggtaaa 960
gtgaccaacg tgggttacgg cctgcagaat gacagcggca ctatctttgc aaccgactac 1020
gatggcacca ctgtgaccac gccgggcgca gagactgtga cttacaaaga tgcttccggt 1080
aacagcacca ctgcggctgt cacactgggt ggctctgatg gcaaaaccaa tctggttacc 1140
gccgctgacg gcaaaacgta cggtgcgact gcactgaatg gtgctgatct gtccgatcct 1200
aataacaccg ttaaatctgt tgcagacaac gctaaaccgt tggctgccct ggatgatgca 1260
attgcgatgg tcgacaaatt ccgctcctcc ctcggtgcgg tgcaaaaccg tctggattcc 1320
gcagtcacca acctgaacaa caccactacc aacctgtctg aagcgcagtc ccgtattcag 1380
gacgccgact atgcgaccga agtgtccaac atgtcgaaag cgcagattat ccagcaggca 1440
ggtaactccg tgctgtccaa agctaaccag gttccgcagc aggttctgtc tctgctgcag 1500
ggttaa
                                                                  1506
<210> 42
<211> 950
<212> DNA
<213> Escherichia coli
<400> 42
aacaaaaacc agtctgcgct gtcgacttct atcgagcgcc tctcttctgg tctgcgtatt 60
aacagcgcta aagatgacgc cgcgggccag gcgattgcta accgctttac ttctaacatc 120
aaaggtetga etcaggeege acgtaacgee aacgaeggta tttetetgge geagaegget 180
gaaggcgcgc tgtcagagat taacaacaac ttgcagcgta ttcgtgaact gaccgttcag 240
gcctctaccg gcacgaactc tgattccgac ctgtcttcta ttcaggacga aatcaaatcc 300
cgtcttgatg aaattgaccg tgtatctggt cagacccagt tcaacggtgt gaacgtgctg 360
tcgaaaaacg attcgatgaa gattcagatt ggtgccaatg ataaccagac gatcagcatt 420
ggcttgcaac aaatcgacag taccactttg aatctgaaag gatttaccgt gtccggcatg 480
geggatttea gegeggegaa aetgaegget getgatggta eageaattge tgetgeggat 540
gtcaaggatg ctgggggtaa acaagtcaat ttactgtctt acactgacac cgcgtctaac 600
agtactaaat atgcggtcgt tgattctgca accggtaaat acatggaagc cactgtagcc 660
attaccggta cggcggcgc ggtaactgtt ggtgcagcgg aagtggcggg agccgctaca 720
gccgatccgt taaaagcact ggatgccgca atcgctaaag tcgacaaatt ccgctcctcc 780
cteggtgeeg tteaaaaceg tetggattet geggteacea acetgaacaa caccaccace 840
aacctgtctg aagcgcagtc ccgtattcag gacgccgact atgcgaccga agtgtccaac 900
atgtcgaaag cgcagattat ccagcaggcc ggtaactccg tgctggcaaa
                                                                  950
```

```
<210> 43
<211> 1707
<212> DNA
<213> Escherichia coli
<400> 43
atggcacaag tcattaatac caacagcctc tcqctqatca ctcaaaataa tatcaacaag 60
aaccagtetg egetgtegag ttetategag egtetgtett etggettgeg tattaacage 120
gcgaaggatg acgcagcggg tcaggcgatt gctaaccgtt ttacctctaa cattaaaggt 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcacagac cactgaaggc 240
gegetgteeg aaateaacaa caacttacag egtateegtg aactgaeggt teaggettet 300
accgggacta actecgatte ggatetggae tecatteagg acgaaateaa atecegtetg 360
gacgaaattg accgcgtatc cggtcaaacc cagttcaacg gtgtgaacgt actggcgaaa 420
gacggttcga tgaaaattca ggttggtgcg aatgacggcc agactatcac gattgatctg 480
aagaaaattg actcagatac gctggggctg aatggtttca acgttaatgg caaaggcact 540
attgcgaaca aagctgctac agtcagcgat ctgaccgctg ctggtgcaac gggaacaggt 600
cettatgetg tgaccacaaa caatacagca etcagegeta gegatgeact gtetegeetg 660
aaaaccggag atacagttac tactactggc tcgagtgctg cgatctatac ttatgatgcg 720
gctaaaggga acttcaccac tcaagcaaca gttgcagatg gcgatgttgt taactttqcq 780
aatactctga aaccagcggc tggcactact gcatcaggtg tttatactcg tagtactggt 840
gatgtgaagt ttgatgtaga tgctaatggc gatgtgacca tcggtggtaa agccgcgtac 900
ctggacgcca ctggtaacct atctacaaac aaccccggca ttgcatcttc agcgaaattg 960
tecgatetgt ttgetagegg tagtacetta gegacaactg gttetateca getgtetgge 1020
acaacttata actttggtgc ageggcaact tetggegtaa eetacaecaa aactgtaage 1080
gctgatactg tactgagcac agtgcagagt gctgcaacgg ctaacacagc agttactggt 1140
gcgacaatta agtataatac aggtattcag tctgcaacgg cgtccttcgg tggtgtgaat 1200
actaatggtg ctggtaattc gaatgacacc tatactgatg cagacaaaga gctcaccaca 1260
accgcatctt acactatcaa ctacaacgtc gataaggata ccggtacagt aactgtagct 1320
tcaaatggcg caggtgcaac tggtaaattt gcagctactg ttggggcaca ggcttatgtt 1380
aactctacag gcaaactgac cactgaaacc accagtgcag gcactgcaac caaagatcct 1440
ctggctgccc tggatgaagc tatcagctcc atcgacaaat tccgttcatc cctgggtgct 1500
atccagaacc gtctggattc cgcggttacc aacctgaaca acaccactac caacctgtcc 1560
gaagcgcagt cccgtattca ggacgccgac tatgcgaccg aagtgtccaa catgtcgaaa 1620
gcgcagatta tccagcaggc cggtaactcc gtgctggcaa aagccaacca ggtaccgcag 1680
caggttctgt ctctgctgca gggttaa
<210> 44
<211> 1720
<212> DNA
<213> Escherichia coli
<400> 44
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
aaccagtetg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgccgcagg tcaggcgatt gctaaccgtt ttacttctaa tattaaaqqc 180
ctgactcagg ctgcacgtaa cgccaatgac ggtatttctg ttgcacagac cactgaaggc 240
gegetgteeg aaateaacaa caacttacag egtgtgegtg aactgaeegt teaggegaee 300
accegtacca actoccagto tgatotggao totatocagg acgaaatcaa atoccgtotg 360
gacgaaattg accgcgtatc cggtcagact cagttcaacg gcgtgaacgt actggcaaaa 420
gacggttcca tgaaaattca ggttggcgcg aatgatqqcc aqaccatcac tatcqacctq 480
aagaagattg actettetac gttgaaactg actggtttta acgtgaatgg ttetggttet 540
gtggcgaata ctgcggcgac taaagacgaa ctggctgctg ctgctgcggc ggcgggtaca 600
actectgetg teggtactga eggegtgace aaatataceg tagacgcagg gettaacaaa 660
gccacagcag caaacgtgtt tgcaaacctt gcagatggtg ctgttgttga tgctagcatt 720
tccaacggtt ttggtgcagc agcagccaca gactacacct acaataaagc tacaaatgat 780
ttcactttca atgccagcat tgctgctggt gctgcggccg gtgatagtaa cagcgcagct 840
ctgcaatcct tcctgactcc aaaagcaggt gatacagcta acctgagcgt caaaatcggt 900
acgacatetg ttaatgttgt tetggegage gatggeaaaa ttacagegaa agatggetea 960
getetgtata tegaeteaae gggtaaeetg aeteagaaea gegeaggeae tgtaaeagea 1020
gcaaccetgg atggactgac caaaaaccat gatgcgacag gagctgttgg tgttgatatc 1080
acgaccgcag atggcgcaac tatetetetg gcaggetetg ctaacgcggc aacaggtact 1140
caatcaggtg caattacact gaaaaatgtt cgtatcagtg ctgatgctct gcagtctgct 1200
gcgaaaggta ctgttatcaa tgttgataat ggtgctgatg atatttctgt tagtaaaacc 1260
gggtgtcgtt actaccggag gtgcgcctac ttatactgat gctgatqqta aattaacqac 1320
aaccaacacc gttgattatt tcctgcaaac tgatggcagc gtaaccaatg gttctggtaa 1380
```

```
atccctgggt gctatccaga accgtctgga ttccgcggtt accaacctga acaaccac 1560
taccaacctg tecgaagege agteeegtat teaggaegee gaetatgega eegaagtgte 1620
caatatgtcg aaagcgcaga tcatccagca ggccggtaac tccgtgttgg caaaagctaa 1680
ccaggtaccg cagcaggttc tgtctctgct gcagggttaa
<210> 45
<211> 14516
<212> DNA
<213> Escherichia coli
<400> 45
gatctgatgg ccgtagggcg ctacgtgctt tctgctgata tctgggctga gttggaaaaa 60
actgctccag gtgcctgggg acgtattcaa ctgactgatg ctattgcaga gttggctaaa 120
aaacagtotg ttgatgccat gotgatgaco ggcgacagot acgactgcgg taagaagatg 180
ggctatatgc aggcattcgt taagtatggg ctgcgcaacc ttaaagaagg ggcgaagttc 240
cgtaagagca tcaagaagct actgagtgag tagagattta cacgtctttg tgacgataag 300
ccagaaaaaa tagcggcagt taacatccag gcttctatgc tttaagcaat ggaatgttac 360
tgccgttttt tatgaaaaat gaccaataat aacaagttaa cctaccaagt ttaatctqct 420
ttttgttgga ttttttcttg tttctggtcg catttggtaa gacaattagc gtgagtttta 480
gagagttttg cgggatctcg cggaactgct cacatctttg gcatttagtt agtgcactgg 540
tagctgttaa gccaggggcg gtagcttgcc taattaattt ttaacgtata catttattct 600
tgccgcttat agcaaataaa gtcaatcgga ttaaacttct tttccattag gtaaaagagt 660
gtttgtagtc gctcagggaa attggttttq qtaqtaqtac ttttcaaatt atccattttc 720
cgatttagat ggcagttgat gttactatgc tgcatacata tcaatgtata ttatttactt 780
ttagaatgtg atatgaaaaa aatagtgatc ataggcaatg tagcgtcaat gatgttaagg 840
ttcaggaaag aattaatcat gaatttagtg aggcaaggtg ataatqtata ttqtctaqca 900
aatgattttt ccactgaaga tcttaaagta ctttcgtcat ggggcgttaa gggggttaaa 960
ttctctctta actcaaaggg tattaatcct tttaaggata taattgctgt ttatgaacta 1020
aaaaaaaattc ttaaggatat ttccccagat attgtatttt catattttgt aaaqccaqta 1080
atatttggaa ctattgcttc aaagttgtca aaagtgccaa ggattgttgg aatgattgaa 1140
ggtctaggta atgccttcac ttattataag ggaaagcaga ccacaaaaac taaaatgata 1200
aagtggatac aaattetttt atataagtta geattaeega tgettgatga tttgatteta 1260
ttaaatcatg atgataaaaa agatttaatc gatcagtata atattaaagc taaggtaaca 1320
gtgttaggtg ggattggatt ggatcttaat gagttttcat ataaagagcc accgaaagag 1380
aaaattacct ttatttttat agcaaggtta ttaagagaga aagggatatt tgagtttatt 1440
gaagccgcaa agttcgttaa gacaacttat ccaagttctg aatttgtaat tttaggaggt 1500
catgatetta tttateetgg teatgtggaa aatgtteaag attggttaga gaaaagttet 1620
gtttttgttt tacctacatc atatcgagaa ggcgtaccaa gggtgatcca agaagctatg 1680
gctattggta gacctgtaat aacaactaat gtacctgggt gtagggatat aataaatgat 1740
ggggtcaatg gctttttgat acctccattt gaaattaatt tactggcaga aaaaatgaaa 1800
tattttattg agaataaaga taaagtactc gaaatggggc ttgctggaag gaagtttgca 1860
gaaaaaaact ttgatgcttt tgaaaaaaat aatagactag catcaataat aaaatcaaat 1920
aatgattttt gacttgagca gaaattattt atatttcaat ctgaaaaata aaggctgtta 1980
ttatgaataa agtggcatta attactggta tcactgggca agatggctcc tatttggcag 2040
aattattgtt agaaaaaggt tatgaagttc atggtattaa acgccgtgca tcttcattta 2100
atactgageg agtggateae atetateagg atteacattt agetaateet aaacttttte 2160
tacactatgg cgatttgaca gatacttcca atctgacccg tattttaaaa gaagttcaac 2220
cagatgaagt ttacaatttg ggggcgatga gccatgtagc ggtatcattt gagtcaccag 2280
aatacactgc tgatgttgat gcgataggaa cattgcgtct tcttgaaqct atcaggatat 2340
tggggctgga aaaaaagaca aaattttatc aggcttcaac ttcagagctt tatggtttgg 2400
ttcaagaaat tccacaaaaa gagactacgc cattttatcc acgttcgcct tatgctgttg 2460
caaaattata tgcctattgg atcactgtta attatcgtga gtcttatggt atgtttgcct 2520
gcaatggtat tetetttaac cacgaatcac etegeegtgg egagacettt gttactegta 2580
aaataacacg cgggatagca aatattgctc aaggtcttga taaatgctta tacttgggaa 2640
atatggattc tctgcgtgat tggggacatg ctaaggatta tgtcaaaatg caatggatga 2700
tgctgcagca agaaactcca gaagattttg taattgctac aggaattcaa tattctgtcc 2760
gtgagtttgt cacaatggcg gcagagcaag taggcataga gttagcattt gaaggtgagg 2820
gagtaaatga aaaaggtgtt gttgtttcgg tcaatggcac tgatgctaaa gctgtaaacc 2880
cgggcgatgt aattatatct gtagatccaa ggtattttag gcctgcagaa gttgaaacct 2940
tgcttggcga tcctactaat gcgcataaaa aattaggatg gagccctgaa attacattgc 3000
gtgaaatggt aaaagaaatg gtttccagcg atttagcaat agcgaaaaag aacgtcttgc 3060
tgaaagctaa taacattgcc actaatattc cgcaagaata aaaaagataa tacattaaat 3120
aattaaaaat ggtgctagat ttattagtac cattattttt ttttgggtga ctaatgttta 3180
ttacatcaga taaatttaga gaaattatca agttagttcc attagtatca attgatctgc 3240
taattgaaaa cgagaatggt gaatatttat ttggtcttag gaataatcga ccggccaaaa 3300
attatttttt tgttccaggt ggtaggattc gcaaaaatga atctattaaa aatgctttta 3360
```

aaagaatatc atctatggaa ttaggtaaag agtatggtat ttcaggaagt gtttttaatg 3420 gtgtatggga acatttctat gatgatggtt ttttttctga aggcgaggca acacattata 3480 tagtgetttg ttacacactg aaagttetta aaagtgaatt gaateteeca gatgatcaac 3540 atcgtgaata cctttggcta actaaacacc aaataaatgc taaacaagat gttcataact 3600 attcaaaaaa ttattttttg taatttttat taaaaattaa tatgcgagag aattgtatgt 3660 ctcaatgtct ttaccctgta attattgccg gaggaaccgg aagccgtcta tggccgttgt 3720 ctcgagtatt ataccctaaa caatttttaa atttagttgg ggattctaca atgttgcaaa 3780 caacaattac gcgtttggat ggcatcgaat gcgaaaatcc aattgttatc tgcaatgaag 3840 atcaccgatt tattgtagca gagcaattac gacagattgg taagctaacc aagaatatta 3900 tacttgagcc gaaaggccgt aatactgcac ctgccatagc tttagctgct tttatcgctc 3960 agaagaataa teetaatgae gaeeetttat tattagtaet tgeggeagae caetetataa 4020 ataatgaaaa agcatttcga gagtcaataa taaaagctat gccgtatgca acttctggga 4080 agttagtaac atttggaatt attccggaca cggcaaatac tggttatgga tatattaaga 4140 gaagttette agetgateet aataaagaat teecageata taatgttgeg gagtttgtag 4200 aaaaaccaga tgttaaaaca gcacaggaat atatttcgag tgggaattat tactggaata 4260 gcggaatgtt tttatttcgc gccagtaaat atcttgatga actacggaaa tttagaccag 4320 atatttatca tagctgtgaa tgtgcaaccg ctacagcaaa tatagatatg gactttgtcc 4380 gaattaacga ggctgagttt attaattgtc ctgaagagtc tatcgattat gctgtgatgg 4440 aaaaaacaaa agacgctgta gttcttccga tagatattgg ctggaatgac gtgggttctt 4500 ggtcatcact ttgggatata agccaaaagg attgccatgg taatgtgtgc catggggatg 4560 tgctcaatca tgatggagaa aatagtttta tttactctga gtcaagtctg gttgcgacag 4620 tcggagtaag taatttagta attgtccaaa ccaaggatgc tgtactggtt gcggaccgtg 4680 ataaagtcca aaatgttaaa aacatagttg acgatctaaa aaagagaaaa cgtgctgaat 4740 actacatgca tcgtgcagtt tttcgccctt ggggtaaatt cgatgcaata gaccaaggcg 4800 atagatatag agtaaaaaaa ataatagtta aaccaggaga agggttagat ttaaggatgc 4860 atcatcatag ggcagagcat tggattgttg tatccggtac tgctaaagtt tcactaggta 4920 gtgaagttaa actattagtt tctaatgagt ctatatatat ccctcaggga gcaaaatata 4980 gtcttgagaa tccaggcgta atacctttgc atctaattga agtaagttct ggtgattacc 5040 ttgaatcaga tgatatagtg cgttttactg acagatataa cagtaaacaa ttcctaaagc 5100 gagattgata aatatgaata aaataacttg cttcaaagca tatgatatac gtgggcgtct 5160 tggtgctgaa ttgaatgatg aaatagcata tagaattggt cgcgcttatg gtgagttttt 5220 taaacctcaa actgtagttg tgggaggaga tgctcgctta acaagtgaga gtttaaagaa 5280 atcactctca aatgggctat gtgatgcagg cgtaaatgtc ttagatcttg gaatgtgtgg 5340 tactgaagag atatattttt ccacttggta tttaggaatt gatggtggaa tcgaggtaac 5400 tgcaagccat aatccaattg attataatgg aatgaaatta gtaaccaaag gtgctcgacc 5460 aatcagcagt gacacaggtc tcaaagatat acaacaatta gtagagagta ataattttga 5520 agageteaae etagaaaaaa aagggaatat taccaaatat tecaceegag atgeetacat 5580 aaatcatttg atgggctatg ctaatctgca aaaaataaaa aaaatcaaaa tagttgtgaa 5640 ttctgggaat ggtgcagctg gtcctgttat tgatgctatt gaggaatgct ttttacggaa 5700 caatattccg attcagtttg taaaaataaa taatacaccc gatggtaatt ttccacatgg 5760 tatccctaat ccattactac ctgagtgcag agaagatacc agcagtgcgg ttataagaca 5820 tagtgctgat tttggtattg catttgatgg tgattttgat aggtgttttt tctttgatga 5880 aaatggacaa tttattgaag gatactacat tgttggttta ttagcggaag tttttttagg 5940 gaaatatcca aacgcaaaaa tcattcatga tcctcgcctt atatggaata ctattgatat 6000 cgtagaaagt catggtggta tacctataat gactaaaacc ggtcatgctt acattaagca 6060 aagaatgcgt gaagaggatg ccgtatatgg cggcgaaatg agtgcgcatc attattttaa 6120 agattttgca tactgcgata gtggaatgat tccttggatt ttaatttgtg aacttttgag 6180 tetgacaaat aaaaaattag gtgaactggt ttgtggttgt ataaacgact ggccggcaag 6240 tggagaaata aactgtacac tagacaatcc gcaaaatgaa atagataaat tatttaatcg 6300 ttacaaagat agtgccttag ctgttgatta cactgatgga ttaactatgg agttctctga 6360 ttggcgtttt aatgttagat gctcaaatac agaacctgta gtacgattga atgtagaatc 6420 taggaataat gctattctta tgcaggaaaa aacagaagaa attctgaatt ttatatcaaa 6480 ataaatttgc acctgagttc ataatgggaa caagaaatat atgaaagtac ttctgactgg 6540 acttactcca accagctctg atttgaattt attagataaa aatgaaatag aaaaattcat 6660 gcttatcaac atgccagact gtattataca tgcagcggga ttagttggag gcattcatgc 6720 aaatataagc aggccgtttg attttctgga aaaaaatttg cagatgggtt taaatttagt 6780 ttccgtcgca aaaaaactag gtatcaagaa agtgcttaac ttgggtagtt catgcatgta 6840 ccccaaaaac tttgaagagg ctattcctga gaaagctctg ttaactggtg agctagaaga 6900 aactaatgag ggatatgcta ttgcgaaaat tgctgtagca aaagcatgcg aatatatatc 6960 aagagaaaac tctaattatt tttataaaac aattatccca tgtaatttat atgggaaata 7020 tgataaattt gatgataact cgtcacatat gattccggca gttataaaaa aaatccatca 7080 tgcgaaaatt aataatgtcc cagagatcga aatttggggg gatggtaatt cgcgccgtga 7140 gtttatgtat gcagaagatt tagctgatct tattttttat gttattccta aaatagaatt 7200 catgcctaat atggtaaatg ctggtttagg ttacgattat tcaattaatg actattataa 7260 gataattgca gaagaaattg gttatactgg gagtttttct catgatttaa caaaaccaac 7320 aggaatgaaa cggaagctag tagatatttc attgcttaat aaaattggtt ggtcaagtca 7380

ctttgaactc agagatggca tcagaaagac ctataattat tacttggaga atcaaaataa 7440 atgattacat acccacttgc tagtaatact tgggatgaat atgagtatgc agcaatacag 7500 tcagtaattg actcaaaaat gtttaccatg ggtaaaaagg ttgagttata tgagaaaaat 7560 tttgctgatt tgtttggtag caaatatgcc gtaatggtta gctctggttc tacagctaat 7620 ctgttaatga ttgctgccct tttcttcact aataaaccaa aacttaaaag aggtgatgaa 7680 ataatagtac ctgcagtgtc atggtctacg acatattacc ctctgcaaca gtatggctta 7740 aaggtgaagt ttgtcgatat caataaagaa actttaaata ttgatatcga tagtttgaaa 7800 aatgctattt cagataaaac aaaagcaata ttgacagtaa atttattagg taatcctaat 7860 gattttgcaa aaataaatga gataataaat aatagggata ttatcttact agaagataac 7920 tgtgagtcga tgggcgcggt ctttcaaaat aagcaggcag gcacattcgg agttatgggt 7980 acctttagtt ctttttactc tcatcatata gctacaatgg aagggggctg cgtagttact 8040 gatgatgaag agctgtatca tgtattgttg tgccttcgag ctcatggttg gacaagaaat 8100 ttaccaaaag agaatatggt tacaggcact aagagtgatg atattttcga agagtcgttt 8160 aagtttgttt taccaggata caatgttcgc ccacttgaaa tgagtggtgc tattgggata 8220 gagcaactta aaaagttacc aggttttata tccaccagac gttccaatgc acaatatttt 8280 gtagataaat ttaaagatca tccattcctt gatatacaaa aagaagttgg tgaaagtagc 8340 tggtttggtt tttccttcgt tataaaggag ggagctgcta ttgagaggaa gagtttagta 8400 aataatctga tctcagcagg cattgaatgc cgaccaattg ttactgggaa ttttctcaaa 8460 aatgaacgtg ttttgagtta ttttgattac tctgtacatg atacggtagc aaatgccgaa 8520 tatatagata agaatggttt ttttgtcgga aaccaccaga tacctttgtt taatgaaata 8580 gattatctac.gaaaagtatt aaaataacta acgaggcact ctatttcgaa tagagtgcct 8640 ttaagatggt attaacagtg aaaaaaattt tagcgtttgg ctattctaaa gtactaccac 8700 cggttattga acagtttgtc aatccaattt gcatcttcat tatcacacca ctaatactca 8760 accacctggg taagcaaagc tatggtaatt ggattttatt aattactatt gtatcttttt 8820 ctcagttaat atgtggagga tgttccgcat ggattgcaaa aatcattgca gaacagagaa 8880 ttcttagtga tttatcaaaa aaaaatgctt tacgtcaaat ttcctataat ttttcaattg 8940 ttattatcgc atttgcggta ttgatttctt ttcttatatt aagtatttgt ttcttcgatg 9000 ttgcgaggaa taattcttca ttcttattcg cgattattat ttgtggtttt tttcaggaag 9060 ttgataattt atttagtggt gcgctaaaag gttttgaaaa atttaatgta tcatgttttt 9120 ttgaagtaat tacaagagtg ctctgggctt ctatagtaat atatggcatt tacggaaatg 9180 cactettata tittacatgt trageettta ceattaaagg tatgetaaaa tatattettg 9240 tatgtctgaa tattaccggt tgtttcatca atcctaattt taatagagtt gggattgtta 9300 attigttaaa tgagtcaaaa tggatgtttc ttcaattaac tggtggcgtc tcacttagtt 9360 tgtttgatag gctcgtaata ccattgattt tatctgtcag taaactggct tcttatgtcc 9420 cttgccttca actagctcaa ttgatgttca ctctttctgc gtctgcaaat caaatattac 9480 taccaatgtt tgctagaatg aaagcatcta acacatttcc ctctaattgt ttttttaaaa 9540 ttctgcttgt atcactaatt tctgttttgc cttgtcttgc gttattcttt tttggtcgtg 9600 atatattatc aatatggata aaccctacat ttgcaactga aaattataaa ttaatgcaaa 9660 ttttagctat aagttacatt ttattgtcaa tgatgacatc ttttcatttc ttgttattag 9720 gaattggtaa atctaagctt gttgcaaatt taaatctggt tgcagggctc gcacttgctg 9780 cttcaacgtt aatcgcagct cattatggcc tttatgcaat atctatggta aaaataatat 9840 atccggcttt tcaattttat tacctttatg tagcttttgt ctattttaat agagcgaaaa 9900 atgtctattg atttactttt ttcaattact gaaatcgcaa ttgttttttc ttgcactatt 9960 tacatattta ctcaatgttt gttaatgcgg aggatctatt tagataaaag tattttaatt 10020 cttttatgct tgctcttttt tttagtaatc attcaacttc ctgagcttaa tgtaaacggt 10080 ttggtcgatt ctttaaagtt atcactgcct ttattgatgg tctttatcgc ttttcaaaaa 10140 ccgaaattat gcttgtgggt tattattgca ttgttgtttt tgaactctgc atttaatttt 10200 ttatatttaa agacattcga taagtttagc tcatttcctt ttactttttt tatattgctg 10260 ttttacttgt ttagattggg aattggtaat ttaccggttt ataaaaataa aaaattttac 10320 gcgttgattt ttctctttat attaatagac ataatgcagt cattgttaat aaattatagg 10380 gggcagattt tatattccgt aatttgcatc ctgatacttg tgtttaaagt taatttaaga 10440 aaaaagattc catacttttt tttaatgctg ccagttttat atgtaattat tatggcttat 10500 attggtttta attatttcaa taaaggcgta actttttttg aacctacagc aagtaatatt 10560 gaacgtacgg ggatgatata ttatttggtt tcacagcttg gtgattatat attccatggt 10620 atggggacat taaatttctt aaataacggc ggacaatata agacgttata tggacttcca 10680 tcattaattc ctaatgaccc tcatgatttt ttattacggt tctttataag tattggtgtg 10740 ataggagcat tggtttatca ttctatattt tttgtttttt ttaggagaat atctttctta 10800 ttatatgaga gaaatgctcc tttcattgtt gtaagttgtt tgttactgtt acaagttgtg 10860 ttaatttata cattaaaccc ttttgatgct tttaatcgat tgatttgcgg gcttacagtt 10920 ggagttgttt atggatttgc aaaaattaga taagtatacc tgtaatggaa atttagacgc 10980 tccacttgtt tcaataatca ttgcaactta taattctgaa cttgatatag ctaagtgttt 11040 gcaatcggta actaatcaat cttataagaa tattgaaatc ataataatgg atggaggatc 11100 ttctgataaa acgcttgata ttgcaaaatc gtttaaagac gaccgaataa aaatagtttc 11160 agagaaagat cgtggaattt atgatgcctg gaataaagca gttgatttat ccattggtga 11220 ttgggtagca tttattggtt cagatgatgt ttactatcat acagatgcaa ttgcttcatt 11280 gatgaagggg gttatggtat ctaatggcgc ccctgtggtt tatgggagga cagcgcacga 11340 aggtcccgat aggaacatat ctggattttc aggcagtgaa tggtacaacc taacaggatt 11400

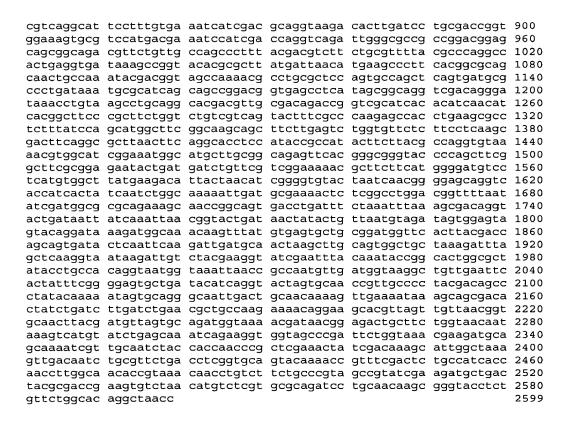
```
taagtttaat tattacaaat gtaatttacc attgcccatt atgagcgcaa tatattctcg 11460
 tgatttcttc agaaacgaac gttttgatat taaattaaaa attgttgctg acgctgattg 11520
 gtttctgaga tgtttcatca aatggagtaa agagaagtca ccttatttta ttaatgacac 11580
 gacccctatt gttagaatgg gatatggtgg ggtttcgact gatatttctt ctcaagttaa 11640
 aactacgcta gaaagtttca ttgtacgcaa aaagaataat atatcctgtt taaacataca 11700
 gctgattctt agatatgcta aaattctggt gatggtagcg atcaaaaata tttttggcaa 11760
 taatgtttat aaattaatgc ataacgggta tcattcccta aagaaaatca agaataaaat 11820
 atgaagattg tttatataat aaccgggctt acttgtggtg gagccgaaca ccttatgacg 11880
 cagttagcag accaaatgtt tatacgcggg catgatgtta atattatttg tctaactggt 11940
 atatctgagg taaagccaac acaaaatatt aatattcatt atgttaatat ggataaaaat 12000
 tttagaagct ttttttagagc tttatttcaa gtaaaaaaaa taattgtcgc cttaaagcca 12060
 gatataatac atagtcatat gtttcatgct aatattttta gtcgttttat taggatgctg 12120
 attccagcgg tgcccctgat atgtaccgca cacaacaaaa atgaaggtgg caatgcaagg 12180
 atgttttgtt atcgactgag tgatttttta gcttctatta ctacaaatgt aagtaaagag 12240
 getgttcaag agtttatage aagaaagget acacetaaaa ataaaatagt agagatteeg 12300
 aattttatta atacaaataa atttgatttt gatattaatg tcagaaagaa aacgcgagat 12360
 gcttttaatt tgaaagacag tacagcagta ctgctcgcag taggaagact tgttgaagca 12420
 aaagactatc cgaacttatt aaatgcaata aatcatttga ttctttcaaa aacatcaaat 12480
 tgtaatgatt ttattttgct tattgctggc gatggcgcat taagaaataa attattggat 12540
 ttggtttgtc aattgaatct tgtggataaa gttttcttct tggggcaaag aagtgatatt 12600
aaagaattaa tgtgtgctgc agatcttttt gttttgagtt ctgagtggga aggttttggt 12660
ctcgttgttg cagaagctat ggcgtgtgaa cgtcccgttg ttgctaccga ttctggtgga 12720
gttaaagaag tcgttggacc tcataatgat gttatccctg tcagtaatca tattctgttg 12780
gcagagaaaa tcgctgagac acttaaaata gatgataacg caagaaaaat aataggtatg 12840
aaaaatagag aatatattgt ttccaatttt tcaattaaaa cgatagtgag tgagtgggag 12900
cgcttatatt ttaaatattc caagcgtaat aatataattg attgaaaata taagtttgta 12960
ctctggatgc aatagtttct ctatgctgtt tttttactgg ctccgtattt ttacttatag 13020
ctggattttg ttatatatca gtattaatct gtctcaactt catctagact acattcaagc 13080
cgcgcatgcg tcgcgcggtg actacacctg acaggagtat gtaatgtcca agcaacagat 13140
cggcgtcgtc ggtatggcag tgatggggcg caacctggcg ctcaacatcg aaagccgcgg 13200
ttataccgtc tccatcttca accgctcccg cgagaaaact gaagaagttg ttgccgagaa 13260
cccggataag aaactggttc cttattacac ggtgaaagag ttcgtcgagt ctcttgaaac 13320
cccacgtcgt atcctgttaa tggtaaaagc aggggcggga actgatgctg ctatcgattc 13380
cctgaagccg tatctggata aaggcgacat cattattgat ggtggcaaca ccttcttcca 13440
ggacactate egtegtaace gtgaactgte egeggaagge tttaacttea teggtaeegg 13500
cgtgtccggc ggtgaagagg gcgccctgaa aggcccatct atcatgccag gtggccagaa 13560
agaagegtat gagetggttg egectateet gaccaagatt getgeggttg etgaagatgg 13620
cgaaccatgt ataacttaca tcggtgctga cggtgcgggt cactacgtga agatggtgca 13680
caacggtatc gaatatggcg atatgcagct gattgctgaa gcctattctc tgcttaaagg 13740
cggccttaat ctgtctaacg aagagctggc aaccactttt accgagtgga atgaaggcga 13800
gctaagtagc tacctgattg acatcaccaa agacatcttc accaaaaaag atgaagaggg 13860
taaatacctg gttgatgtga tcctggacga agctgcgaac aaaggcaccg gtaaatggac 13920
cagccagage tetetggate tgggtgaace getgtegetg atcaccgaat ccgtattege 13980
tegetacate tettetetga aagaceageg cattgeggea tetaaagtge tgtetggtee 14040
gcaggctaaa ctggctggtg ataaagcaga gttcgttgag aaagtccgtc gcgcgctgta 14100
cctgggtaaa atcgtctctt atgcccaagg cttctctcaa ctgcgtgccg cgtctgacga 14160
atacaactgg gatctgaact acggcgaaat cgcgaagatc ttccgcgcgg gctgcatcat 14220
tegtgegeag tteetgeaga aaattaetga egegtatget gaaaacaaag geattgetaa 14280
cctgttgctg gctccgtact tcaaaaatat cgctgatgaa tatcagcaag cgctgcgtga 14340
tgtagtggct tatgctgtgc agaacggtat tccggtaccg accttctctg cagcggtagc 14400
ctactacgac agctaccgtt ctgcggtact gccggctaat ctgattcagg cacagcgtga 14460
ttacttcggt gcgcacacgt ataaacgcac tgataaagaa ggtgtgttcc acaccg
<210> 46
<211> 1380
<212> DNA
<213> Escherichia coli
<400> 46
aacaaatete agtettetet tagetetget attgagegte tgtettetgg tetgegtatt 60
aacagcgcaa aagacgatgc agcaggtcag gcgattgcta accgttttac ggcaaatatt 120
aaaggtetga eecaggette eegtaaegeg aatgatggta tttetgttge geagaceaet 180
gaaggtgege tgaatgaaat taacaacaac etgeagegta ttegtgaaet ttetgtteag 240
gcaactaacg gtactaactc tgacagcgat ctttcttcta tccaggctga aattactcaa 300
cgtctggaag aaattgaccg tgtatctgag caaactcagt ttaacggcgt gaaagtcctt 360
gctgaaaata atgaaatgaa aattcaggtt ggtgctaatg atggtgaaac catcactatc 420
aatctggcaa aaattgatgc gaaaactctc ggcctggacg gttttaatat cgatggcgcg 480
```

```
cagaaagcaa ccggcagtga cctgatttct aaatttaaag cgacaggtac tgataattat 540
caaattaacg gtactgataa ctatactgtt aatgtagata gtggagtagt acaggataaa 600
gatggcaaac aagtttatgt gagtgctgcg gatggttcac ttacgaccag cagtgatact 660
caattcaaga ttgatgcaac taagcttgca gtggctgcta aagatttagc tcaaggtaat 720
aagattgtct acgaaggtat cgaatttaca aataccggca ctggcgctat acctgccaca 780
ggtaatggtg aattaaccgc caatgttgat ggtaaggctg ttgaattcac tatttcgggg 840
agtgctgata catcaggtac tagtgcaacc gttgccccta cgacagccct atacaaaaat 900
agtgcagggc aattgactgc aacaaaagtt gaaaataaag cagcgacact atctgatctt 960
gatctgaacg ctgccaagaa aacaggaagc acgttagttg ttaacggtgc aacttacgat 1020
qttaqtqcaq atqqtaaaac gataacqqaq actqcttctq qtaacaataa aqtcatqtat 1080
ctgagcaaat cagaaggtgg tagcccgatt ctggtaaacg aagatgcagc aaaatcgttg 1140
caatctacca ccaacccgct cgaaactatc gacaaagcat tggctaaagt tgacaatctg 1200
cgttctgacc tcggtgcagt acaaaaccgt ttcgactctg ccatcaccaa ccttggcaac 1260
accgtaaaca acctgtette tgeeegtage egtategaag atgetgaeta egegaeegaa 1320
gtgtctaaca tgtctcgtgc gcagatcctg caacaagcgg gtacctctgt tctggcacag 1380
<210> 47
<211> 1497
<212> DNA
<213> Escherichia coli
<400> 47
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
aaccagtetg egetgtegag ttetategag egtetgtett etggettgeg tattaacage 120
gcgaaggatg acgcagcggg tcaggcgatt gctaaccgtt tcacctctaa cattaaaggc 180
ctgactcagg cggcccgtaa cgccaacgac ggtatctccg ttgcgcagac caccgaaggc 240
gegetgteeg aaatcaacaa caacttacag egtgtgegtg aactgaeggt acaggecact 300
accegetacta actetegage tegatetete tetatecage aceaaattaa atceceetete 360
gatgaaattg accgcgtatc tggtcagacc cagttcaacg gcgtgaacgt gctggcaaaa 420
aatggeteca tgaaaateca ggttggegea aatgataace agaetateae tategatetg 480
aagcagattg atgctaaaac tcttggcctt gatggtttta gcgttaaaaa taacgataca 540
gttaccacta gtgctccagt aactgctttt ggtgctacca ccacaaacaa tattaaactt 600
actggaatta ccctttctac ggaagcagcc actgatactg gcggaactaa cccagcttca 660
attgagggtg tttatactga taatggtaat gattactatg cgaaaatcac cggtggtgat 720
aacgatggga agtattacgc agtaacagtt gctaatgatg gtacagtgac aatggcgact 780
ggagcaacgg caaatgcaac tgtaactgat gcaaatacta ctaaagctac aactatcact 840
tcaggcggta cacctgttca gattgataat actgcaggtt ccgcaactgc caaccttggt 900
gctgttagct tagtaaaact gcaggattcc aagggtaatg ataccgatac atatgcgctt 960
aaagatacaa atggcaatct ttacgctgcg gatgtgaatg aaactactgg tgctgtttct 1020
gttaaaacta ttacctatac tgactcttcc ggtgccgcca gttctccaac cgcggtcaaa 1080
ctgggcggag atgatggcaa aacagaagtg gtcgatattg atggtaaaac atacgattct 1140
gccgatttaa atggcggtaa tctgcaaaca ggtttgactg ctggtggtga ggctctgact 1200
gctgttgcaa atggtaaaac cacggatccg ctgaaagcgc tggacgatgc tatcgcatct 1260
gtagacaaat teegttette eeteggtgeg gtgcaaaace gtetggatte egeggttace 1320
aacctgaaca acaccactac caacctgtct gaagcgcagt cccgtattca ggacgccgac 1380
tatgcgaccg aagtgtccaa tatgtcgaaa gcgcagatca tccagcaggc cggtaactcc 1440
gtgttggcaa aagctaacca ggtaccgcag caggttctgt ctctgctgca gggttaa
<210> 48
<211> 1695
<212> DNA
<213> Escherichia coli
<400> 48
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
aaccagtetg egetgtegag ttetategag egtetgtett etggettgeg tattaacage 120
gcgaaggatg acgccgcagg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcgcagac caccgaaggc 240
gcgctgtctg aaatcaacaa caacttacag cgtattcgtg aactgacggt tcaggcttct 300
accgggacta actctgattc ggatctggac tccattcagg acgaaatcaa atcccgtctg 360
gacgaaattg accgcgtatc cggtcaaacc cagttcaacg gtgtgaacgt actggcgaaa 420
gacggttcga tgaaaattca ggttggtgcg aatgacggcc agactatcac tattgatctg 480
aagaaaattg actctgatac gctggggctg aatggtttta acgttaacgg caaaggtact 540
attgcgaaca aagcggcaac cattagtgat ctggcggcga cgggggcgaa tgttactaac 600
tcaagcaata ttgttgtcac gacaaagttc aatgccttgg atgcagcgac tgcatttagc 660
```

```
accaatgatt ttacgacaga aaatacagta gcgacaggca ctgcaacgac agatcttggc 780
gctactctga aggctgctgc tgggcagagt caatcaggta catatacctt tgcaaatggt 840
aaagttaact ttgatgttga tgcaaqcggt aatatcacta ttggcggcga aaaggctttc 900
ttggttggtg gagcgctgac tactaacgat cccaccggct ccactccagc aacgatgtct 960
tecetgttta aggeegegga tgacaaagat geegeteaat eetegattga ttttggeggg 1020
aaaaaatacg aatttgctgg tggcaattct actaatggtg gcggcgttaa attcaaagac 1080
acggtgtctt ctgacgcgct tttggctcag gttaaagcgg atagtactgc taataatgta 1140
aaaatcacct ttaacaatgg teetetgtea tteaetgeat egtteeaaaa tggtgtatet 1200
ggctccgcgg catcgaatgc agcctacatt gatagcgaag gcgaactgac aactactgaa 1260
tcctacaaca caaattattc cgtagacaaa gacacggggg ctgtaagtgt tacagggggg 1320
ageggtaegg gtaaataege egeaaaegtg ggtgeteagg ettatgtagg tgeagatggt 1380
aaattaacca cgaatactac tagtaccggc tctgcaacca aagatccact aaatgcgctg 1440
gatgaggcaa ttgcatccat cgacaaattc cgttcttccc tgggggctat ccagaaccgt 1500
ctggattccg cagtcaccaa cctgaacaac accactacca acctgtctga agcgcagtcc 1560
cgtattcagg acgccgacta tgcgaccgaa gtgtccaaca tgtcgaaagc gcagatcatc 1620
cagcaggeeg gtaacteegt gttggcaaaa getaaceagg taeegeagea ggttetgtet 1680
ctgctgcagg gttaa
<210> 49
<211> 1164
<212> DNA
<213> Escherichia coli
<400> 49
aacaagaacc agtctgcgct gtcgagttct atcgagcgtc tgtcttctgg cttgcgtatt 60
aacagcgcga aggatgacgc cgcgggtcag gcgattgcta accgttttac ttctaacatt 120
aaaggeetga eteaggetge aegtaaegee aaegaeggta tttetgttge geagaecaee 180
gaaggcgcgc tgtccgaaat taacaacaac ttacagcgtg tgcgtgagct gactgttcag 240
gcgaccaccg gtactaactc tgagtctgac ctgtcttcta tccaggacga aatcaaatct 300
cgcctggaag agattgatcg tgtttcaagt cagactcaat ttaacggcgt gaatgttttg 360
gctaaagatg ggaaaatgaa cattcaggtt ggggcaagtg atggacagac tatcactatt 420
gatctgaaaa agatcgattc atctacacta aacctctcca gttttgatgc tacaaacttg 480
ggcaccagtg ttaaagatgg ggccaccatc aataagcaag tggcagtaga tgctggcgac 540
tttaaagata aagcttcagg atcgttaggt accctaaaat tagttgagaa agacggtaag 600
tactatgtaa atgacactaa aagtagtaag tactacgatg ccgaagtaga tactagtaag 660
ggtgaaatta acttcaactc tacaaatgaa agtggaacta ctcctactgc agcgacggaa 720
gtaactactg ttggccgcga tgtaaaattg gatgcttctg cacttaaagc caaccaatcg 780
cttgtcgtgt ataaagataa aagcggcaat gatgcttata tcattcagac caaagatgta 840
acaactaatc aatcaacttt caatgccgct aatatcagtg atgctggtgt tttatctatt 900
gqtqcatcta caaccqcqcc aagcaattta acaqctqacc cqcttaaqqc tcttqatqat 960
gcaattgcat ctgttgataa attccgctct tctctcggtg ccgttcagaa ccgtctggat 1020
tetgecattg ceaacetgaa caacaceact accaacetgt etgaagegea gteeegtatt 1080
caggacgetg actatgegac egaagtgtee aacatgtega aagegeagat tatecageag 1140
gccggtaact ccgtgctggc aaaa
<210> 50
<211> 1818
<212> DNA
<213> Escherichia coli
<400> 50
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgcagcggg tcaggcgatt gctaaccgtt tcacctctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgctaacgat ggtatctctc tggcgcagac cactgaaggc 240
gcactgtctg agattaacaa caacttacaa cgtgtgcgtg agttgactgt acaggcgacc 300
accggtacta actotgatto tgacotggot totattoagg acgaaatcaa atcccgtttg 360
tetgaaattg acegegtate egggeagace eagtteaacg gegtgaacgt attgtetaaa 420
gatggctccc tgaaaattca ggttggcgca aatgatggtc agactatctc tatcgacctg 480
aagaaaattg actctgatac tctgggtttg aatggtttca acgttaatgg ttctggtacc 540
attgcaaaca aagcggccac aatcagtgac ttgactgctc agaaagccgt tgacaacggt 600
aatggtactt ataaagttac aactagcaac gctgcactta ctgcatctca ggcattaagt 660
aagetgagtg atggegatae tgtagatatt geaacetatg etggtggtae aagtteaaca 720
gttagttata aatacgacgc agatgcaggt aacttcagtt ataacaatac tgcaaacaaa 780
```

acaagtgctg cggctggaac tctggcagat actcttctcc cggcagctgg ccagactaaa 840

```
ctgacaattg gcggacagca agcctacctg actactgatg gtaaccttac aacaaacaac 960
 teeggtggtg eggetaetge aactettaaa gagetgttta etettgetgg egatggtaaa 1020
 tetetgggga acggeggtae tgetacegtt actetggata atactaegta taattteaaa 1080
 getgetgega aegttaetga tggtgetggt gteategetg etgetggtgt aaettataca 1140
 gccactgttt ctaaagatgt cattctggca caactgcaat ctgcaagtca ggcagcagca 1200
 accgctaccg acggtgatac tgtcgcaacg atcaactata aatctggtgt catgatcggt 1260
 teegetaeet ttaccaatgg taaaggtaet geegatggta tgaettetgg tacaaeteea 1320
 gtcgtagcta caggtgctaa agctgtatat gttgatggca acaatgaact gacttccact 1380
 gcatettaeg ataegaetta etetgteaae geagataeag gegeagtaaa agtggtatea 1440
 ggtactggta ctggtaaatt tgaagctgtt gctggtgcgg atgcttatgt aagcaaagat 1500
 ggcaaattaa cgacagaaac caccagtgca ggcactgcaa ccaaagatcc tttggctgcc 1560
 ctggatgctg ctatcagctc catcgacaaa ttccgttcct ccctgggtgc tatccagaac 1620
 cgtctggatt ccgcagtcac caacctgaac aacaccacta ctaacctgtc tgaagcgcag 1680
 tecegtatte aggaegeega etatgegaee gaagtgteea atatgtegaa agegeagate 1740
 atccagcagg ccggtaactc tgtgttggca aaagctaacc aggtaccgca gcaggttctg 1800
 tctctgctgc agggttaa
 <210> 51
 <211> 1344
 <212> DNA
 <213> Escherichia coli
 <400> 51
 atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
 aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgccgcagg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcacagac cactgaaggc 240
 gegetgteeg aaateaacaa caacttaeag egtattegtg aactgaeggt teaggettet 300
accgggacta actctgattc ggatctggac tccattcagg acgaaatcaa atcccgtctc 360
gacgaaattg accgcgtttc cggtcagacc cagttcaacg gcgtgaacgt gctggcgaaa 420
gacggttcga tgaagattca ggttggcgcg aatgacgggc agaccatctc tatcgatttg 480
cagaaaattg attcttcaac gctgggattg aaaggtttct cggtatcagg gaacgcatta 540
aaagttagcg atgcgataac tacagtteet ggtgetaatg etggegatge eeeggttacg 600
gttaaatttg gtgcgaacga taccgctgct gccgcaatgg ctaaaacatt gggaataagt 660
gatacatcag gcttgtccct acataacgta caaagcgcgg atggtaaagc gacaggaacc 720
tatgttgttc aatctggtaa tgacttctat tcggcttccg ttaatgctgg tggcgttgtt 780
acgettaata ecaceaatgt taettteaet gateetgega acggtgttae cacageaaca 840
cagacaggtc agcctatcaa ggtcacgacg aatagtgctg gcgcggctgt tggctatgtt 900
actattcaag gcaaagatta ccttgctggt gcagacggta aggatgcaat tgaaaacggt 960
ggtgacgctg caacaaatga agacacaaaa atccaactta ccgatgaact cgatgttgat 1020
ggttctgtaa aaacagcggc aacagcaaca ttttctggta ctgcaaccaa cgatccgctg 1080
gcacttttag acaaagctat ctcgcaagtt gatactttcc gctcctccct cggtgccgta 1140
caaaaccgtc tggattctgc ggtcaccaac ctgaataaca ccaccaccaa cctgtctgaa 1200
gegeagteee gtatteagga egeegaetat gegaeegaag tgteeaacat gtegaaageg 1260
cagatcatcc agcaggcggg taactctgtg ctgtctaaag ctaaccaggt accgcagcag 1320
gttctgtctc tgctgcaggg ttaa
<210> 52
<211> 2599
<212> DNA
<213> Escherichia coli
<400> 52
cttctcttag ctctgctatt gagcgtctgt cttctggtct gcgtattaac agcgcaaaag 60
acgatgcagc aggtcaggcg attgctaacc gttttacggc aaatattaaa ggtctgaccc 120
aggetteeeg taaegegaat gatggtattt etgttgegea gaccaetgaa ggtgegetga 180
atgaaattaa caacaacctg cagcgtattc gtgaactttc tgttcaggca actaacggta 240
ctaactctga cagcgatctt tcttctatcc aggctgaaat tactcaacgt ctggaagaaa 300
ttgaccgtgt atctgagcaa actcagttta acggcgtgaa agtccttgct gaaaataatg 360
aaatgaaaat tcaggttggt gctaatgatg gtgaaaccat tgacctgccc ccacgattag 420
atacaacact cagttagtaa cgtcggaatc ttcattctca gaatgaccct ttctccagcc 480
cgctgcaaat tcagacggtg tctgataatt cagcgtggag tgcgggcggc attcgttata 540
atcctgccgc cagtcattaa taattttcct ggcatgaacg atatcgctga accagtgctc 600
attcaaacat tcatcgcgaa atcgtccgtt aaagctctca ataaatccgt tctgcgttgg 660
cttgcccggc tggattaagc gcaactcaac accatgctca aaggcccatt gatccagtgc 720
acggcaagtg aacteeggee eetggteagt tettategte geeggatage etegaaacag 780
tgcaatgctg tccagaatac gcgtgacctg aacgcctgaa atcccaaagg caacagtgac 840
```



<210> 53 <211> 1245 <212> DNA <213> Escherichia coli

<400> 53

aacaaaaacc agtctgcgct gtcgacttct atcgagcgcc tctcttctgg tctgcgcatt 60 aacagegeta aagatgaege tgegggeeag gegattgeta acegetteae ttetaacate 120 aaaggtetga eteaggeege aegtaaegee aacgaeggta tetetetgge geagaecaet 180 gaaggegeac tgtctgaaat caacaacaac ttgcagegtg ttegtgaact gaeegttcag 240 gccactaccg gtactaactc tgattctgac ctgtcttcaa tccaggacga aatcaaatcc 300 cgtctcgatg aaattgaccg cgtatccggt cagactcagt tcaacggcgt gaacgtactg 360 gcaaaagatg gctcgatgaa aattcaggtc ggtgcaaatg atggtcagac aatcagcatt 420 gatttgcaga agattgattc ttctacttta gggttaaatg gtttttctgt ttccaaaaat 480 gcagtatetg ttggtgatge tattactcaa ttgcctggcg agacggcage cgatgcacca 540 gtaaccatca agtttgatga ttcagtaaaa actgatttaa aactgaccga tgcttcaggg 600 ttaagtctgc ataacctcaa agatgaaaat ggtaatttaa ctaaccagta tgttgtacag 660 aatggcggaa aatcttacgc tgctacagtc gctgccaatg gtaatgttac gctgaacaaa 720 gcaaatgtaa cctacagcga tgtcgcaaac ggtattgata ccgcaacgca gtcaggccag 780 ttagttcagg ttggtgcaga ttctaccggt acgccaaaag cattcgtgtc tgtccaaggt 840 aaaagetttg geattgatga egeegeettg aagaataaca etggtgatge tacegetaet 900 ccaccgggaa catctgggac aacagttgtc gcagcgtcaa ttcatctgag tacgggcaaa 960 aactetgtag acgetgatgt aacggettee actgaattea caggtgette aaccaacgat 1020 ccactgactc tgctggacaa agctatcgca tctgttgata aattccgttc ttctttgggg 1080 geggtacaga acegtetgag etcegetgta aceaacetga acaacaceac caceaacetg 1140 tetgaagege agteeegtat teaggaegee gaetatgega eegaagtgte caacatgteg 1200 aaagcgcaga ttatccagca ggcaggtaac tccgtgctgt ccaaa 1245

```
<210> 54
 <211> 1212
 <212> DNA
<213> Escherichia coli
<400> 54
aacaaaaacc agtctgcgct gtcgacttct atcgaacgcc tctcttctgg cctgcgtatt 60
aacagtgcga aagatgacgc tgccggtcag gcgatagcta accgtttcac ctctaacatt 120
aaaggeetga eteaggetge gegtaaegee aaegaeggta tttetetgge geagaeeaca 180
gaaggtgcgt tgtctgaaat caacaacaac ttgcaacgtg tgcgtgagtt gaccgttcag 240
gcgacgaccg gtactaactc tgattctgac ctgtcatcta ttcaggacga aatcaaatcc 300
cgtctggatg agattgaccg tgtttccggt cagacccagt tcaacggcgt gaatgtactg 360
gcaaaaagacg gttcgatgaa gattcaggtt ggcgcgaatg atggccagac tattagcatt 420
gatttacaga aaattgactc ttctacatta gggttgaatg gtttctccgt ttctgctcaa 480
tcacttaacg ttggtgattc aattactcaa attacaggag ccgctgggac aaaacctgtt 540
ggtgttgatt tcactgctgt tgcgaaagat ctgactactg cgacaggtaa aactgtcgat 600
gtttccagcc tgacgttaca caacaccctg gatgcgaaag gggctgccac cgcacagttc 660
gtcgttcaat ccggtagtga tttctactcc gcgtccattg accatgcaag tggtgaagtg 720
acgttgaata aagccgatgt cgaatacaaa gacaccgata atggactaac gactgcagct 780
actcagaaag atcagctgat taaagttgcc gctgactctg acggcgcggc tgcgggatat 840
gtaacattcc agggtaaaaa ctacgctaca acggctccag cggcgcttaa tgatgacact 900
acggcaacag ccacagcgaa caaagttgtt gttgaattat ctacagcaac tccgactgcg 960
cagtteteag gggettette tgetgateea etggeaettt tagacaaage cattgeacag 1020
gttgatactt teegeteete eeteggtgee gtteaaaace gtetggaete tgeggtaace 1080
aacctgaaca acaccaccac caacctgtct gaagcgcagt cccgtattca ggacgccgac 1140
tatgcgaccg aagtgtctaa catgtcgaaa gcgcagatca tccagcaggc gggtaactct 1200
gtgctgtcta aa
<210> 55
<211> 1758
<212> DNA
<213> Escherichia coli
<400> 55
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgccgcggg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcacagac cactgaaggc 240
gcgctgtccg aaatcaacaa caacttacag cgtatccgtg agctgacggt tcaggcttct 300
accgggacta actctgattc ggatctggac tccattcagg acgaaatcaa atcccgtctc 360
gacgaaattg accgcgtatc cggtcagacc cagttcaacg gcgtgaacgt actggcaaaa 420
gacggttcga tgaaaattca ggttggtgcg aatgacggtg aaactatcac tatcgacctg 480
aagaaaatcg attctgatac tctgggtctg aatggtttta acgtaaatgg taaaggtact 540
attaccaaca aagetgeaac ggtaagtgat ttaaettetg etggegegaa gttaaacace 600
acgacaggic titatgatci gaaaaccgaa aatacciigt taactaccga igcigcattc 660
gataaattag ggaatggcga taaagtcacc gttggcggcg tagattatac ttacaacgct 720
aaatctggtg attttactac caccaaatct actgctggta cgggtgtaga cgccgcggcg 780
caggetactg atteagetaa aaaacgtgat gegttagetg ecaccettea tgetgatgtg 840
ggtaaatctg ttaatggttc ttacaccaca aaagatggta ctgtttcttt cgaaacggat 900
tcagcaggta atatcaccat cggtggaagc caggcatacg tagacgatgc aggcaacttg 960
acgactaaca acgctggtag cgcagctaaa gctgatatga aagcgctgct taaagccgcg 1020
agcgaaggta gtgacggtgc ctctctgaca ttcaatggca ctgaatatac tatcgcaaaa 1080
gcaactcctg cgacaacctc tccagtagct ccgttaatcc ctggtgggat tacttatcag 1140
gctacagtga gtaaagatgt agtattgagc gaaaccaaag cggctgccgc gacatcttca 1200
attacettta atteeggtgt aetgageaaa aetattgggt ttaeegeggg tgaateeagt 1260
gatgctgcga agtcttatgt ggatgataaa ggtggtatta ctaacgttgc cgactataca 1320
gtctcttaca gcgttaacaa ggataacggc tctgtgactg ttgccgggta tgcttcagcg 1380
actgatacca ataaagatta tgctccagca attggtactg ctgtaaatgt gaactccgcg 1440
ggtaaaatca ctactgagac taccagtgct ggttctgcaa cgaccaaccc gcttgctgcc 1500
ctggacgacg ctatcagctc catcgacaaa ttccgttctt ccctgggtgc tatccagaac 1560
cgtctggatt ccgcagtcac caacctgaac aacaccacta ccaacctgtc tgaagcgcag 1620
tcccgtattc aggacgccga ctatgcgacc gaagtgtcca acatgtcgaa agcgcagatt 1680
atccagcagg ccggtaactc cgtgctggca aaagccaacc aggtaccgca gcaggttctg 1740
tctctgctgc aqqqttaa
                                                                  1758
```

<210> 56 <211> 14024 <212> DNA <213> Escherichia coli

<400> 56 gtaaccaagg gcggtacgtg cataaatttt aatgcttatc aaaactatta gcattaaaaa 60 tatataagaa atteteaaat gaacaaagaa aeegttteaa taattatgee egtttacaat 120 ggggccaaaa ctataatctc atcagtagaa tcaattatac atcaatctta tcaagatttt 180 gttttgtata tcattgacga ttgtagcacc gatgatacat tttcattaat caacagtcga 240 tacaaaaaca atcagaaaat aagaatattg cgtaacaaga caaatttagg tgttgcagaa 300 agtcgaaatt atggaataga aatggccacg gggaaatata tttctttttg tgatgcggat 360 gatttgtggc acgagaaaaa attagagcgt caaatcgaag tgttaaataa tgaatgtgta 420 gatgtggtat gttctaatta ttatgttata gataacaata gaaatattgt tggcgaagtt 480 aatgctcctc atgtgataaa ttatagaaaa atgctcatga aaaactacat agggaatttg 540 acaggaatct ataatgccaa caaattgggt aagttttatc aaaaaaagat tggtcacgag 600 gattatttga tgtggctgga aataattaat aaaacaaatg gtgctatttg tattcaagat 660 aatctggcgt attacatgcg ttcaaataat tcactatcgg gtaataaaat taaagctgca 720 aaatggacat ggagtatata tagagaacat ttacatttgt cctttccaaa aacattatat 780 tattttttat tatatgcttc aaatggagtc atgaaaaaaa taacacattc actattaagg 840 agaaaggaga ctaaaaagtg aagtcagcgg ctaagttgat ttttttattc ctatttacac 900 tttatagtct ccagttgtat ggggttatca tagatgatcg tataacaaat tttgatacaa 960 aggtattaac tagtattata attatatttc agattttttt tgttttatta ttttatctaa 1020 cgattataaa tgaaagaaaa cagcagaaaa aatttatcgt gaactgggag ctaaagttaa 1080 tactcgtttt cctttttgtg actatagaaa ttgctgctgt agttttattt cttaaagaag 1140 gtattcctat atttgatgat gatccagggg gggctaaact tagaatagct gaaggtaatg 1200 gactttacat tagatatatt aagtattttg gtaatatagt tgtgtttgca ttaattattc 1260 tttatgatga gcataaattc aaacagagga ccatcatatt tgtatatttt acaacgattg 1320 ctttatttgg ttatcgttct gaattggtgt tgctcattct tcaatatata ttgattacca 1380 atateetgte aaaggataae egtaateeta aaataaaaag aataataggg tattttttat 1440 tggtaggggt tgtatgctcg ttgttttatc taagtttagg acaagacgga gaacaaaatg 1500 actcatataa taatatgtta aggataatta ataggttaac aatagagcaa gttgaaggtg 1560 ttccatatgt tgtttctgaa tctattaaga acgatttctt tccgacacca gagttagaaa 1620 aggaattaaa agcaataata aatagaatac agggaataaa gcatcaagac ttattttatg 1680 gagaacggtt acataaacaa gtatttggag acatgggagc aaatttttta tcagttacta 1740 cgtatggagc agaactgtta gttttttttg gttttctctg tgtattcatt atccctttag 1800 ggatatatat acctttttat cttttaaaga gaatgaaaaa aacccatagc tcgataaatt 1860 gcgcattcta ttcatatatc attatgattt tattgcaata cttagtggct gggaatgcat 1920 cggccttctt ttttggtcct tttctctccg tattgataat gtgtactcct ctgatcttat 1980 tgcatgatac gttaaagaga ttatcacgaa atgaaaatat cagttataac tgtgacttat 2040 aataatgctg aagggttaga aaaaacttta agtagtttat caattttaaa aataaaacct 2100 tttgagatta ttatagttga tggcggctct acagatggaa cgaatcgtgt cattagtaga 2160 tttactagta tgaatattac acatgtttat gaaaaagatg aagggatata tgatgcgatg 2220 aataagggcc gaatgttggc caaaggcgac ttaatacatt atttaaacgc cggcgatagc 2280 gtaattggag atatatataa aaatatcaaa gagccatgtt tgattaaagt tggccttttc 2340 gaaaatgata aacttctggg attttcttct ataacccatt caaatacagg gtattgtcat 2400 caaggggtga ttttcccaaa gaatcattca gaatatgatc taaggtataa aatatgtgct 2460 gattataagc ttattcaaga ggtgtttcct gaagggttaa gatctctatc tttgattact 2520 tcgggttatg taaaatatga tatgggggga gtatcttcaa aaaaaagaat tttaagagat 2580 aaagagcttg ccaaaattat gtttgaaaaa aataaaaaaa accttattaa gtttattcca 2640 atttcaataa tcaaaatttt attccctgaa cgtttaagaa gagtattgcg gaaaatgcaa 2700 tatatttgtc taactttatt cttcatgaag aatagttcac catatgataa tgaataaaat 2760 caaaaaaata cttaaatttt gcactttaaa aaaatatgat acatcaagtg ctttaggtag 2820 agaacaggaa aggtacagga ttatatcctt gtctgttatt tcaagtttga ttagtaaaat 2880 acteteacta etttetetta tattaaetgt aagtttaaet ttaeettatt taggacaaga 2940 gagatttggt gtatggatga ctattaccag tcttggtgct gctctgacat ttttggactt 3000 aggtatagga aatgcattaa caaacaggat cgcacattca tttgcgtgtg gcaaaaattt 3060 aaagatgagt cggcaaatta gtggtgggct cactttgctg gctggattat cgtttgtcat 3120 aactgcaata tgctatatta cttctggcat gattgattgg caactagtaa taaaaggtat 3180 aaacgagaat gtgtatgcag agttacaaca ctcaattaaa gtctttgtaa tcatatttgg 3240 acttggaatt tattcaaatg gtgtgcaaaa agtttatatg ggaatacaaa aagcctatat 3300 aagtaatatt gttaatgcca tatttatatt gttatctatt attactctag taatatcgtc 3360 gaaactacat gcgggactac cagttttaat tgtcagcact cttggtattc aatacatatc 3420 gggaatctat ttaacaatta atcttattat aaagcgatta ataaagttta caaaagttaa 3480 catacatgct aaaagagaag ctccatattt gatattaaac ggttttttct tttttatttt 3540 acagttaggc actctggcaa catggagtgg tgataacttt ataatatcta taacattggg 3600 tgttacttat gttgctgttt ttagcattac acagagatta tttcaaatat ctacggtccc 3660

tettaegatt tataaeatee egttatggge tgettatgea gatgeteatg caegeaatga 3720 tactcaattt ataaaaaaga cgctcagaac atcattgaaa atagtgggta tttcatcatt 3780 cttattggcc ttcatattag tagtgttcgg tagtgaagtc gttaatattt ggacagaagg 3840 aaagattcag gtacctcgaa cattcataat agcttatgct ttatggtctg ttattgatgc 3900 tttttcgaat acatttgcaa gctttttaaa tggtttgaac atagttaaac aacaaatgct 3960 tgctgttgta acattgatat tgatcgcaat tccagcaaaa tacatcatag ttagccattt 4020 tgggttaact gttatgttgt actgcttcat ttttatatat attgtaaatt actttatatg 4080 gtataaatgt agttttaaaa aacatatcga tagacagtta aatataagag gatgaaaatg 4140 aaatatatac cagtttacca accgtcattg acaggaaaag aaaaagaata tgtaaatgaa 4200 tgtctggact caacgtggat ttcatcaaaa ggaaactata ttcagaagtt tgaaaataaa 4260 tttgcggaac aaaaccatgt gcaatatgca actactgtaa gtaatggaac ggttgctctt 4320 catttagctt tgttagcgtt aggtatatcg gaaggagatg aagttattgt tccaacactg 4380 acatatatag catcagttaa tgctataaaa tacacaggag ccaccccat tttcgttgat 4440 tcagataatg aaacttggca aatgtctgtt agtgacatag aacaaaaaat cactaataaa 4500 actaaagcta ttatgtgtgt ccatttatac ggacatccat gtgatatgga acaaattgta 4560 gaactggcca aaagtagaaa tttgtttgta attgaagatt gcgctgaagc ctttggttct 4620 aaatataaag gtaaatatgt gggaacattt ggagatattt ctacttttag cttttttgga 4680 aataaaacta ttactacagg tgaaggtgga atggttgtca cgaatgacaa aacactttat 4740 gaccgttgtt tacattttaa aggccaagga ttagctgtac ataggcaata ttggcatgac 4800 gttataggct acaattatag gatgacaaat atctgcgctg ctataggatt agcccagtta 4860 gaacaagctg atgattttat atcacgaaaa cgtgaaattg ctgatattta taaaaaaaat 4920 atcaacagtc ttgtacaagt ccacaaggaa agtaaagatg tttttcacac ttattggatg 4980 gtctcaattc taactaggac cgcagaggaa agagaggaat taaggaatca ccttgcagat 5040 aaactcatcg aaacaaggcc agttttttac cctgtccaca cgatgccaat gtactcggaa 5100 aaatatcaaa agcaccctat agctgaggat cttggttggc gtggaattaa tttacctagt 5160 ttccccagcc tatcgaatga gcaagttatt tatatttgtg aatctattaa cgaattttat 5220 agtgataaat agcctaaaat attgtaaagg tcattcatga aaattgcgtt gaattcagat 5280 ggattttacg agtggggcgg tggaattgat tttattaaat atattctgtc aatattagaa 5340 acgaaaccag aaatatgtat cgatattett ttaccgagaa atgatataca ttetettata 5400 agagaaaaag catttccttt taaaagtata ttaaaagcaa ttttaaagag ggaaaggcct 5460 cgatggattt cattaaatag atttaatgag caatactata gagatgcctt tacacaaaat 5520 aatatagaga cgaatcttac ctttattaaa agtaagagct ctgcctttta ttcatatttt 5580 gatagtagcg attgtgatgt tattetteet tgeatgegtg tteetteggg aaatttgaat 5640 aaaaaagcat ggattggtta tatttatgac tttcaacact gttactatcc ttcattttt 5700 agtaagcgag aaatagatca aaggaatgtg ttttttaaat tgatgctcaa ttgcgctaac 5760 aatattattg ttaatgcaca ttcagttatt accgatgcaa ataaatatgt tgggaattat 5820 tetgeaaaac tacattetet teeatttagt ecatgeeete aattaaaatg gttegetgat 5880 tactctggta atattgccaa atataatatt gacaaggatt attttataat ttgcaatcaa 5940 ttttggaaac ataaagatca tgcaactgct tttagggcat ttaaaattta tactgaatat 6000 aatcctgatg tttatttagt atgcacggga gctactcaag attatcgatt ccctggatat 6060 tttaatgaat tgatggtttt ggcaaaaaag ctcggaattg aatcgaaaat taagatatta 6120 ccaaccttat ttgaaggcgg gcctggaggg ggggtaacat ttgacgctat tgcattaggg 6240 aaaaaagtta tactatctga catagatgtc aataaagaag ttaattgcgg tgatgtatat 6300 ttettteagg caaaaaacea ttatteatta aatgaegega tggtaaaage tgatgaatet 6360 aaaatttttt atgaacctac aactetgata gaattgggte teaaaagaeg caatgegtgt 6420 gcagattttc ttttagatgt tgtgaaacaa gaaattgaat cccgatctta atatattcaa 6480 gaggtatata atgactaaag tegetettat tacaggtgta actggacaag atggatetta 6540 tctagctgag tttttgcttg ataaagggta tgaagttcat ggtatcaaac gccgagcctc 6600 atcttttaat acagaacgca tagaccatat ttatcaagat ccacatggtt ctaacccaaa 6660 ttttcacttg cactatggag atctgactga ttcatctaac ctcactagaa ttctaaagga 6720 ggtacagcca gatgaagtat ataatttagc tgctatgagt cacgtagcag tttcttttga 6780 gtctccagaa tatacagccg atgtcgatgc aattggtaca ttacgtttac tggaagcaat 6840 tcgcttttta ggattggaaa acaaaacgcg tttctatcaa gcttcaacct cagaattata 6900 tggacttgtt caggaaatcc ctcaaaaaga atccaccct ttttatcctc gttcccctta 6960 tgcagttgca aaactttacg catattggat cacggtaaat tatcgagagt catatggtat 7020 ttatgcatgt aatggtatat tgttcaatca tgaatctcca cgccgtggag aaacgtttgt 7080 aacaaggaaa attactcgag gacttgcaaa tattgcacaa ggcttggaat catgtttgta 7140 tttagggaat atggattcgt tacgagattg gggacatgca aaagattatg ttagaatgca 7200 atggttgatg ttacaacagg agcaacccga agattttgtg attgcaacag gagtccaata 7260 ctcagtccgt cagtttgtcg aaatggcagc agcacaactt ggtattaaga tgagctttgt 7320 tggtaaagga atcgaagaaa aaggcattgt agattcggtt gaaggacagg atgctccagg 7380 tgtgaaacca ggtgatgtca ttgttgctgt tgatcctcgt tatttccgac cagctgaagt 7440 tgatactttg cttggagatc cgagcaaagc taatctcaaa cttggttgga gaccagaaat 7500 tactcttgct gaaatgattt ctgaaatggt tgccaaagat cttgaagccg ctaaaaaaaca 7560 ttototttta aaatogoatg gtttttotgt aagottagot otggaatgat gatgaataag 7620 caacgtattt ttattgctgg tcaccaagga atggttggat cagctattac ccgacgcctc 7680

aaacaacgtg atgatgttga gttggtttta cgtactcggg atgaattgaa cttgttggat 7740 aqtaqcqctq ttttqqattt tttttcttca cagaaaatcq accaqqttta ttttqqcaqca 7800 gcaaaagtcg gaggtatttt agctaacagt tcttatcctg ccgattttat atatgagaat 7860 ataatgatag aggcgaatgt cattcatgct gcccacaaaa ataatgtaaa taaactgctt 7920 ttcctcgqtt cgtcgtgtat ttatcctaag ttagcacacc aaccgattat ggaagacgaa 7980 ttattacaag ggaaacttga gccaacaaat gaaccttatg ctatcgcaaa aattgcaggt 8040 attaaattat gtgaatctta taaccgtcag tttgggcgtg attaccgttc agtaatgcca 8100 accaatcttt atggtccaaa tgacaatttt catccaagta attctcatgt gattccggcg 8160 cttttgcgcc gctttcatga tgctgtggaa aacaattctc cgaatgttgt tgtttgggga 8220 agtggtactc caaagcgtga attcttacat gtagatgata tggcttctgc aagcatttat 8280 gtcatggaga tgccatacga tatatggcaa aaaaatacta aagtaatgtt gtctcatatc 8340 aatattggaa caggtattga ctgcacgatt tgtgagcttg cggaaacaat agcaaaagtt 8400 gtaggttata aagggcatat tacgttcgat acaacaaagc ccgatggagc ccctcgaaaa 8460 ctacttgatg taacgcttct tcatcaacta ggttggaatc ataaaattac ccttcacaag 8520 ggtcttgaaa atacatacaa ctggtttctt gaaaaccaac ttcaatatcg ggggtaataa 8580 tgtttttaca ttcccaagac tttgccacaa ttgtaaggtc tactcctctt atttctatag 8640 atttgattgt ggaaaacgag tttggcgaaa ttttgctagg aaaacgaatc aaccgcccgg 8700 cacagggcta ttggttcgtt cctggtggta gggtgttgaa agatgaaaaa ttgcagacag 8760 cctttgaacg attgacagaa attgaactag gaattcgttt gcctctctct gtgggtaagt 8820 tttatggtat ctggcagcac ttctacgaag acaatagtat ggggggagac ttttcaacgc 8880 attatatagt tatagcattc cttcttaaat tacaaccaaa cattttgaaa ttaccgaagt 8940 cacaacataa tgcttattgc tggctatcgc gagcaaagct gataaatgat gacgatgtgc 9000 attataattg tegegeatat titaacaata aaacaaatga tgegattggc ttagataata 9060 aggatataat atgtctgatg cgccaataat tgctgtagtt atggccggtg gtacaggcag 9120 tegtetttgg ceaetttete gtgaactata tecaaageag tttttaeaae tetetggtga 9180 taacaccttg ttacaaacga ctttgctacg actttcaggc ctatcatgtc aaaaaccatt 9240 agtgataaca aatgaacagc atcgctttgt tgtggctgaa cagttaaggg aaataaataa 9300 attaaatggt aatattattc tagaaccatg cgggcgaaat actgcaccag caatagcgat 9360 atctgcgttt catgcgttaa aacgtaatcc tcaggaagat ccattgcttc tagttcttgc 9420 ggcagaccac gttatagcta aagaaagtgt tttctgtgat gctattaaaa atgcaactcc 9480 catcgctaat caaggtaaaa ttgtaacgtt tggaattata ccagaatatg ctgaaactgg 9540 ttatgggtat attgagagag gtgaactatc tgtaccgctt caagggcatg aaaatactgg 9600 tttttattat gtaaataagt ttgtcgaaaa gcctaatcgt gaaaccgcag aattgtatat 9660 gacttctggt aatcactatt ggaatagtgg aatattcatg tttaaggcat ctgtttatct 9720 tgaggaattg agaaaattta gacctgacat ttacaatgtt tgtgaacagg ttgcctcatc 9780 ctcatacatt gatctagatt ttattcgatt atcaaaagaa caatttcaag attgtcctgc 9840 tgaatctatt gattttgctg taatggaaaa aacagaaaaa tgtgttgtat gccctgttga 9900 tattggttgg agtgacgttg gatcttggca atcgttatgg gacattagtc taaaatcgaa 9960 aacaggagat gtatgtaaag gtgatatatt aacctatgat actaagaata attatatcta 10020 ctctgagtca gcgttggtag ccgccattgg aattgaagat atggttatcg tgcaaactaa 10080 agatgccgtt cttgtgtcta aaaagagtga tgtacagcat gtaaaaaaaa tagtcgaaat 10140 gcttaaattg cagcaacgta cagagtatat tagtcatcgt gaagttttcc gaccatgggg 10200 aaaatttgat tcgattgacc aaggtgagcg atacaaagtc aagaaaatta ttgtgaaacc 10260 tggtgagggg ctttctttaa ggatgcatca ccatcgttct gaacattgga tcgtgctttc 10320 atacattccc cttggcgcag cgtatagtct tgagaatccg ggcataatcc ctcttaatct 10440 tattgaagtc agttcagggg attatttggg agaggatgat attataagac agaaagaacg 10500 ttacaaacat gaagattaac atatgaaatc tttaacctgc tttaaagcct atgatattcg 10560 cgggaaatta ggcgaagaac tgaatgaaga tattgcctgg cgcattgggc gtgcctatgg 10620 cgaatttctc aaaccgaaaa ccattgtttt aggcggtgat gtccgcctca ccagcgaagc 10680 gttaaaactg gegettgega aaggtttaca ggatgeggge gtegatgtge tggatategg 10740 tatgtccggc accgaagaga tctatttcgc cacgttccat ctcggagtgg atggcggcat 10800 cgaagttacc gccagccata acccgatgga ttacaacggc atgaagctgg tgcgcgaagg 10860 ggctcgcccg atcagcggtg ataccggact gcgcgatgtc cagcgtctgg cagaagccaa 10920 tgacttccct cctgtcgatg aaaccaaacg tggtcgctat cagcaaatca atctgcgtga 10980 cgcttacgtt gatcacctgt tcggttatat caacgtcaaa aacctcacgc cgctcaagct 11040 ggtgatcaac tccgggaacg gcgcagcggg tccggttggtg gacgccattg aagcccgatt 11100 taaagccctc ggcgcaccgg tggaattaat caaagtacac aacacgccgg acggcaattt 11160 ccccaacggt attcctaacc cgctgctgcc ggaatgccgc gacgacaccc gtaatgcggt 11220 catcaaacac ggcgcggata tgggcattgc ctttgatggc gattttgacc gctgtttcct 11280 gtttgacgaa aaagggcagt ttatcgaggg ctactacatt gtcggcctgc tggcagaagc 11340 gttcctcgaa aaaaatcccg gcgcgaagat catccacgat ccacgtctct cctggaacac 11400 cgttgatgtg gtgactgccg caggcggcac cccggtaatg tcgaaaaccg gacacgcctt 11460 tattaaagaa cgtatgcgca aggaagacgc catctacggt ggcgaaatga gcgctcacca 11520 ttacttccgt gatttcgctt actgcgacag cggcatgatc ccgtggctgc tggtcgccga 11580 actggtgtgc ctgaaaggaa aaacgctggg cgaaatggtg cgcgaccgga tggcggcgtt 11640 teeggeaage ggtgagatea acageaaact ggegeaacee gttgaggeaa ttaategegt 11700

```
ggaacagcat tttagccgcg aggcgctggc ggtggatcgc accgatggca tcagcatgac 11760
 ctttgccgac tggcgcttta acctgcgctc ctccaacacc gaaccggtgg tgcggttgaa 11820
 tgtggaatca cgcggtgatg taaagctaat ggaaaagaaa actaaagctc ttcttaaatt 11880
 gctaagtgag tgattattta cattaatcat taagcgtatt taagattata ttaaagtaat 11940
 gttattgcgg tatatgatga atatgtgggc ttttttatgt ataacgacta taccgcaact 12000
ttatctagga aaagattaat agaaataaag ttttgtactg accaatttgc atttcacgtc 12060
 acgattgaga cgttcctttg cttaagacat tttttcatcg cttatgtaat aacaaatgtg 12120
 ccttatataa aaaggagaac aaaatggaac ttaaaataat tgagacaata gatttttatt 12180
 atccctgttt acgatattat agccaaagtt gtatcctgca tcagtcctgc aatatttcac 12240
gagtgctttg ttaactgaat acatgtctgc cattttccag atgataacga cgtcatcgca 12300
attgatggta aaacacttcg gcacacttat gacaagagtc gtcgcagagg agtggttcat 12360
gtcattagtg cgtttcagca atgcacagtc tggtcctcgg atagatcaag acggatgaga 12420
aacctaatgc gttcacagtt attcatgaac tttctaaaat gatgggtatt aaaggaaaaa 12480
taatcataac tgatgcgatg gcttgccaga aagatattgc agagaagata taaaaacaga 12540
gatgtgatta tttattcgct gtaaaaggaa ataagagtcg gcttaataga gtctttgagg 12600
agatatttac gctgaaagaa ttaaataatc caaaacatga cagttacgca attagtgaaa 12660
agaggcacgg cagagacgat gtccgtcttc atattgtttg agatgctcct gatgagctta 12720
ttgatttcac gtttgaatgg aaagggctgc agaatttatg aatggcagtc cactttctct 12780
caataatagc agagcaaaag aaagaatccg aaatgacgat caaatattat attagatctg 12840
ctgctttaac cgcagagaag ttcgccacag taaatcgaaa tcactggcgc atggagaata 12900
tgcattcgaa tgattttcta gaatgcggca catcgctatt aatatctgac aatgataatg 13020
tattcaaggc aggattatca tgtaagatgc gaaaagcagt catggacaga aacttcctag 13080
cgtcaggcat tgcagcgtgc gggctttcat aatcttgcat tggttttgat aagatatttc 13140
tttggagatg ggaaaatgaa tttgtatggt atttttggtg ctggaagtta tggtagagaa 13200
acaataccca ttctaaatca acaaataaag caagaatgtg gttctgacta tgctctggtt 13260
tttgtggatg atgttttggc aggaaagaaa gttaatggtt ttgaagtgct ttcaaccaac 13320
tgctttctaa aagcccctta tttaaaaaag tattttaatg ttgctattgc taatgataag 13380
atacgacaga gagtgtctga gtcaatatta ttacacgggg ttgaaccaat aactataaaa 13440
catccaaata gcgttgttta tgatcatact atgataggta gtggcgctat tatttctccc 13500
tttgttacaa tatctactaa tactcatata gggaggtttt ttcatgcaaa catatactca 13560
tacgttgcac atgattgtca aataggagac tatgttacat ttgctcctgg ggctaaatgt 13620
aatggatatg ttgttattga agacaatgca tatataggct cgggtgcagt aattaagcag 13680
ggtgtteeta ategeecaet tattattgge gegggageea ttataggtat gggggetgtt 13740
gtcactaaaa gtgttcctgc cggtataact gtgtgcggaa atccagcaag agaaatgaaa 13800
agategecaa catetattta atgggaatge gaaaacaegt tecaaatggg actaatgttt 13860
aaaatatata taatttcgct aatttactaa attatggctt ctttttaagc tatcctttac 13920
ttagttatta ctgatacagc atgaaattta taatactctg atacattttt atacgttatt 13980
caagccgcat atctagcggt aacccctgac aggagtaaac aatg
                                                                 14024
<210> 57
<211> 1758
<212> DNA
<213> Escherichia coli
<400> 57
```

atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60 aaccagtetg egetgtegag ttetategag egtetgtett etggettgeg tattaacage 120 gcgaaggatg acgccgcagg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180 ctgactcagg cggcccgtaa cgccaacgac ggtatttctg ttgcgcagac caccgaaggc 240 gcgctgtccg aaatcaacaa caacttacag cgtattcgtg aactgacggt tcaggccact 300 acagggacta acteegatte tgacetggae tecateeagg acgaaateaa atetegtett 360 gatgaaattg accgcgtatc cggccagacc cagttcaacg gcgtgaacgt gctggcgaaa 420 gacggttcaa tgaaaattca ggttggtgcg aatgacggcg aaaccatcac gatcgacctg 480 aaaaaaatcg attctgatac tctgggtctg aatggcttta acgtaaatgg taaaggtact 540 attaccaaca aagetgcaac ggtaagtgat ttaacttetg etggegegaa gttaaacace 600 acgacaggtc tttatgatct gaaaaccgaa aataccttgt taactaccga tgctgcattc 660 gataaattag ggaatggcga taaagtcaca gttggcggcg tagattatac ttacaacgct 720 aaatctggtg attttactac cactaaatct actgctggta cgggtgtaga cgccgcggcg 780 caggetgetg atteagette aaaacgtgat gegttagetg ceaccettea tgetgatgtg 840 ggtaaatctg ttaatggttc ttacaccaca aaagatggta ctgtttcttt cgaaacggat 900 tcagcaggta atatcaccat cggtggaagc caggcatacg tagacgatgc aggcaacttg 960 acgactaaca acgctggtag cgcagctaaa gctgatatga aagcgctgct caaagcagcg 1020 agcgaaggta gtgacggtgc ctctctgaca ttcaatggca cagaatatac catcgcaaaa 1080 gcaactectg cgacaaceae tecagtaget eegttaatee etggtgggat taettateag 1140 gctacagtga gtaaagatgt agtattgagc gaaaccaaag cggctgccgc gacatcttca 1200 attaccttta attccggtgt actgagcaaa actattgggt ttaccgcggg tgaatccagt 1260

```
gatgctgcga agtcttatgt ggatgataaa ggtggtatca ctaacgttgc cgactataca 1320
gtctcttaca gcgttaacaa ggataacggc tctgtgactg ttgccgggta tgcttcagcg 1380
actgatacca ataaagatta tgctccagca attggtactg ctgtaaatgt gaactccgcg 1440
ggtaaaatca ctactgagac taccagtgct ggttctgcaa cgaccaaccc gcttgctgcc 1500
ctggacgacg caatcagctc catcgacaaa ttccgttctt ccctgggtgc tatccagaac 1560
cgtctggatt ccgcagtcac caacctgaac aacaccacta ccaacctgtc cgaagcgcag 1620
tcccgtattc aggacgccga ctatgcgacc gaagtgtcca acatgtcgaa agcgcagatc 1680
attcagcagg ccggtaactc cgtgctggca aaagctaacc aggtaccgca gcaggttctg 1740
tctctgctgc agggttaa
<210> 58
<211> 1758
<212> DNA
<213> Escherichia coli
<400> 58
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaaataa tatcaacaag 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgcagcggg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcgcagac caccgaaggc 240
gcgctgtccg aaatcaacaa caacttacag cgtattcgtg aactgacggt tcaggccact 300
acagggacta actccgattc tgacctggac tccatccagg acgaaatcaa atctcgtctt 360
gatgaaattg accgcgtatc cggccagacc cagttcaacg gcgtgaacgt gctggcgaaa 420
gacggttcaa tgaaaattca ggttggtgcg aatgacggcg aaaccatcac gatcgacctg 480
aaaaaaatcg attctgatac tctgggtctg aatggcttta acgtaaatgg taaaggtact 540
attaccaaca aagctgcaac ggtaagtgat ttaacttctg ctggcgcgaa gttaaacacc 600
acgacaggtc tttatgatct gaaaaccgaa aataccttgt taactaccga tgctgcattc 660
gataaattag ggaatggcga taaagtcaca gttggcggcg tagattatac ttacaacgct 720
aaatctggtg attttactac cactaaatct actgctggta cgggtgtaaa cgccgcggcg 780
caggetgetg atteagette aaaacgtgat gegttagetg ceaecettea tgetgatgtg 840
ggtaaatctg ttaatggttc ttacaccaca aaagatggta ctgtttcttt cgaaacggat 900
tcagcaggta atatcaccat cggtggaagc caggcatacg tagacgatgc aggcaacttg 960
acgactaaca acgctggtag cgcagctaaa gctgatatga aagcgctgct caaagcagcg 1020
agcgaaggta gtgacggtgc ctctctgaca ttcaatggca cagaatatac catcgcaaaa 1080
gcaactcctg cgacaaccac tccagtagct ccgttaatcc ctggtgggat tacttatcag 1140
gctacagtga gtaaagatgt agtattgagc gaaaccaaag cggctgccgc gacatcttca 1200
attaccttta attccggtgt actgagcaaa actattgggt ttaccgcggg tgaatccagt 1260
gatgctgcga agtcttatgt ggatgataaa ggtggtatca ctaacgttgc cgactataca 1320
gtctcttaca gcgttaacaa ggataacggc tctgtgactg ttgccgggta tgcttcagcg 1380
actgatacca ataaagatta tgctccagca attggcactg ctgtaaatgt gaactccgcg 1440
ggtaaaatca ctactgagac taccagtgct ggttctgcaa cgaccaaccc gcttgctgcc 1500
ctggacgacg caatcagctc catcgacaaa ttccgttctt ccctgggtgc tatccagaac 1560
cgtctggatt ccgcggtcac caacctgaac aacaccacta ccaacctgtc cgaagcgcag 1620
tcccgtattc aggacgccga ctatgcgacc gaagtgtcca acatgtcgaa agcgcagatc 1680
atccagcagg ccggtaactc cgtgctggca aaagctaacc aggtaccgca gcaggttctg 1740
tctctgctgc agggttaa
 <210> 59
 <211> 1758
 <212> DNA
 <213> Escherichia coli
 <400> 59
 atggcacaag tcattaatac caacageete tegetgatea etcaaaataa tateaacaag 60
 aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
 gcgaaggatg acgccgcggg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
 ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcacagac cactgaaggc 240
 gcgctgtccg aaatcaacaa caacttacag cgtatccgtg agctgacggt tcaggcttct 300
 accgggacta actctgattc ggatctggac tccattcagg acgaaatcaa atcccgtctc 360
 gacgaaattg accgcgtatc cggtcagacc cagttcaacg gcgtgaacgt actggcaaaa 420
 gacggttcga tgaaaattca ggttggtgcg aatgacggtg aaactatcac tatcgacctg 480
 aagaaaatcg attctgatac tctgggtctg aatggtttta acgtaaatgg taaaggtact 540
 attaccaaca aagctgcaac ggtaagtgat ttaacttctg ctggcgcgaa gttaaacacc 600
 acgacaggtc tttatgatct gaaaaccgaa aataccttgt taactaccga tgctgcattc 660
 gataaattag ggaatggcga taaagtcacc gttggcggcg tagattatac ttacaacgct 720
 aaatctggtg attttactac caccaaatct actgctggta cgggtgtaga cgccgcggcg 780
```

```
caggetaetg atteagetaa aaaaegtgat gegttagetg ceaecettea tgetgatgtg 840
 ggtaaatetg ttaatggtte ttacaccaca aaagatggta etgtttettt egaaaeggat 900
 tcagcaggta atatcaccat cggtggaagc caggcatacg tagacgatgc aggcaacttg 960
 acgactaaca acgctggtag cgcagctaaa gctgatatga aagcgctgct taaagccgcg 1020
 agcgaaggta gtgacggtgc ctctctgaca ttcaatggca ctgaatatac tatcgcaaaa 1080
 gcaactcctg cgacaacctc tccagtagct ccgttaatcc ctggtgggat tacttatcag 1140
 gctacagtga gtaaagatgt agtattgagc gaaaccaaag cggctgccgc gacatcttca 1200
 attaccttta attccggtgt actgagcaaa actattgggt ttaccgcggg tgaatccagt 1260
 gatgctgcga agtcttatgt ggatgataaa ggtggtatta ctaacgttgc cgactataca 1320
 gtetettaca gegttaacaa ggataaegge tetgtgaetg ttgeegggta tgetteageg 1380
 actgatacca ataaagatta tgctccagca attggtactg ctgtaaatgt gaactccgcg 1440
 ggtaaaatca ctactgagac taccagtgct ggttctgcaa cgaccaaccc gcttgctgcc 1500
 ctggacgacg ctatcagctc catcgacaaa ttccgttctt ccctgggtgc tatccagaac 1560
 cgtctggatt ccgcagtcac caacctgaac aacaccacta ccaacctgtc tgaagcgcag 1620
 tecegtatte aggaegeega etatgegaee gaagtgteea acatgtegaa agegeagatt 1680
 atccagcagg ccggtaactc cgtgctggca aaagccaacc aggtaccgca gcaggttctg 1740
 tctctgctgc agggttaa
                                                                    1758
 <210> 60
 <211> 1758
 <212> DNA
 <213> Escherichia coli
 <400> 60
 atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgccgcagg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
 ctgactcagg cggcccgtaa cgccaacgac ggtatttctg ttgcgcagac caccgaaggc 240
gcgctgtccg aaatcaacaa caacttacag cgtattcgtg aactgacggt tcaggccact 300
acagggacta acteegatte tgacetggae tecateeagg acgaaateaa atetegtett 360
gatgaaattg accgcgtatc cggccagacc cagttcaacg gcgtgaacgt gctggcgaaa 420
gacggttcaa tgaaaattca ggttggtgcg aatgacggcg aaaccatcac gatcgacctg 480
aaaaaaatcg attctgatac tctgggtctg aatggcttta acgtaaatgg taaaggtact 540
attaccaaca aagctgcaac ggtaagtgat ttaacttctg ctggcgcgaa gttaaacacc 600
acgacaggic titatgatet gaaaacegaa aatacetigt taactacega tgeigeatie 660
gataaattag ggaatggcga taaagtcaca gttggcggcg tagattatac ttacaacgct 720
aaatctggtg attttactac cactaaatct actgctggta cgggtgtaga cgccgcggcg 780
caggetgetg atteagette aaaacgtgat gegttagetg ceaecettea tgetgatgtg 840
ggtaaatctg ttaatggttc ttacaccaca aaagatggta ctgtttcttt cgaaacggat 900
tcagcaggta atatcaccat cggtggaagc caggcatacg tagacgatgc aggcaacttg 960
acgactaaca acgctggtag cgcagctaaa gctgatatga aagcgctgct caaagcagcg 1020
agcgaaggta gtgacggtgc ctctctgaca ttcaatggca cagaatatac catcgcaaaa 1080
gcaactcctg cgacaaccac tccagtagct ccgttaatcc ctggtgggat tacttatcag 1140
gctacagtga gtaaagatgt agtattgagc gaaaccaaag cggctgccgc gacatcttca 1200
attaccttta attccggtgt actgagcaaa actattgggt ttaccgcggg tgaatccagt 1260
gatgctgcga agtcttatgt ggatgataaa ggtggtatca ctaacgttgc cgactataca 1320
gtotottaca gogttaacaa ggataacggo totgtgactg ttgccgggta tgottcagcg 1380
actgatacca ataaagatta tgctccagca attggtactg ctgtaaatgt gaactccgcg 1440
ggtaaaatca ctactgagac taccagtget ggttetgeaa egaccaacce gettgetgee 1500
ctggacgacg caatcagctc catcgacaaa ttccgttctt ccctgggtgc tatccagaac 1560
cgtctggatt ccgcagtcac caacctgaac aacaccacta ccaacctgtc cgaagcgcag 1620
tecegtatte aggaegeega etatgegaee gaagtgteea acatgtegaa agegeagate 1680
attcagcagg ccggtaactc cgtgctggca aaagctaacc aggtaccgca gcaggttctg 1740
tctctgctgc agggttaa
                                                                   1758
<210> 61
<211> 1758
<212> DNA
<213> Escherichia coli
<400> 61
atggcacaag tcattaatac caacagcete tegetgatea etcaaaataa tatcaacaag 60
aaccagtetg egetgtegag ttetategag egtetgtett etggettgeg tattaacage 120
gcgaaggatg acgccgcagg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcgcagac caccgaaggc 240
gegetgteeg aaateaacaa caaettaeag egtattegtg aactgaeggt teaggeeact 300
```

```
acagggacta actocgatto tgacotggao tocatocagg acgaaatcaa atotogtott 360
gatgaaattg accgcgtatc cggccagacc cagttcaacg gcgtgaacgt gctggcgaaa 420
gacggttcaa tgaaaattca ggttggtgcg aatgacggcg aaaccatcac gatcgacctg 480
aaaaaaatcg attctgatac tctgggtctg aatggcttta acgtaaatgg taaaggtact 540
attaccaaca aagctgcaac ggtaagtgat ttaacttctg ctggcgcgaa gttaaacacc 600
acgacaggtc tttatgatct gaaaaccgaa aataccttgt taactaccga tgctgcattc 660
gataaattag ggaatggcga taaagtcaca gttggcggcg tagattatac ttacaacgct 720
aaatctggtg attttactac cactaaatct actgctggta cgggtgtaga cgccgcggcg 780
caggetgetg atteagette aaaacgtgat gegttagetg ceaccettea tgetgatgtg 840
ggtaaatctg ttaatggttc ttacaccaca aaagatggta ctgtttcttt cgaaacggat 900
tcagcaggta atatcaccat cggtggaagc caggcatacg tagacgatgc aggcaacttg 960
acgactaaca acgctggtag cgcagctaaa gctgatatga aagcgctgct caaagcagcg 1020
agcgaaggta gtgacggtgc ctctctgaca ttcaatggca cagaatatac catcgcaaaa 1080
gcaactectg cgacaaccac tecagtaget cegttaatec etggtgggat tacttateag 1140
gctacagtga gtaaagatgt agtattgagc gaaaccaaag cggctgccgc gacatcttca 1200
attaccttta attccggtgt actgagcaaa actattgggt ttaccgcggg tgaatccagt 1260
gatgctgcga agtcttatgt ggatgataaa ggtggtatca ctaacgttgc cgactataca 1320
gtotottaca gogttaacaa ggataacggc totgtgactg ttgccgggta tgcttcagcg 1380
actgatacca ataaagatta tgctccagca attggcactg ctgtaaatgt gaactccgcg 1440
ggtaaaatca ctactgagac taccagtgct ggttctgcaa cgaccaaccc gcttgctgcc 1500
ctggacgacg caatcagctc catcgacaaa ttccgttctt ccctgggtgc tatccagaac 1560
cgtctggatt ccgcggtcac caacctgaac aacaccacta ccaacctgtc cgaagcgcag 1620
tecegtatte aggacgeega etatgegace gaagtgteea acatgtegaa agegeagate 1680
atccagcagg ccggtaactc cgtgctggca aaagctaacc aggtaccgca gcaggttctg 1740
                                                                  1758
tctctgctgc agggttaa
```

<210> 62 <211> 1758 <212> DNA <213> Escherichia coli

<400> 62

```
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgccgcggg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcacagac cactgaaggc 240
gegetgteeg aaateaacaa caacttacag egtateegtg agetgaeggt teaggettet 300
accgggacta actctgattc ggatctggac tccattcagg acgaaatcaa atcccgtctc 360
gacgaaattg accgcgtatc cggtcagacc cagttcaacg gcgtgaacgt actggcaaaa 420
gacggttcga tgaaaattca ggttggtgcg aatgacggtg aaactatcac tatcgacctg 480
aagaaaatcg attctgatac tctgggtctg aatggtttta acgtaaatgg taaaggtact 540
attaccaaca aagctgcaac ggtaagtgat ttaacttctg ctggcgcgaa gttaaacacc 600
acgacaggtc tttatgatct gaaaaccgaa aataccttgt taactaccga tgctgcattc 660
gataaattag ggaatggcga taaagtcacc gttggcggcg tagattatac ttacaacgct 720
aaatctggtg attttactac caccaaatct actgctggta cgggtgtaga cgccgcggcg 780
caggctactg attcagctaa aaaacgtgat gcgttagctg ccacccttca tgctgatgtg 840
ggtaaatetg ttaatggtte ttacaceaca aaagatggta etgtttettt egaaaeggat 900
tcagcaggta atatcaccat cggtggaagc caggcatacg tagacgatgc aggcaacttg 960
acgactaaca acgctggtag cgcagctaaa gctgatatga aagcgctgct taaagccgcg 1020
agcgaaggta gtgacggtgc ctctctgaca ttcaatggca ctgaatatac tatcgcaaaa 1080
qcaactcctq cqacaacctc tccagtaget ccgttaatcc ctggtgggat ttcttatcag 1140
gctacagtga gtaaagatgt agtattgagc gaaaccaaag cggctgccgc gacatcttca 1200
attaccttta attccggtgt actgagcaaa actattgggt ttaccgcggg tgaatccagt 1260
gatgctgcga agtcttatgt ggatgataaa ggtggtatta ctaacgttgc cgactataca 1320
gtctcttaca gcgttaacaa ggataacggc tctgtgactg ttgccgggta tgcttcagcg 1380
actgatacca ataaagatta tgctccagca attggtactg ctgtaaatgt gaactccgcg 1440
ggtaaaatca ctactgagac taccagtgct ggttctgcaa cgaccaaccc gcttgctgcc 1500
ctggacgacg ctatcagete catcgacaaa ttccgttett eeetgggtge tatccagaae 1560
cqtctqqatt ccqcaqtcac caacctgaac aacaccacta ccaacctgtc tgaagcgcag 1620
tecegtatte aggaegeega etatgegaee gaagtgteea acatgtegaa agegeagatt 1680
atccagcagg ccggtaactc cgtgctggca aaagccaacc aggtaccgca gcaggttctg 1740
tctctgctgc agggttaa
```

```
<210> 63
<211> 1758
<212> DNA
<213> Escherichia coli
<400> 63
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaaataa tatcaacaag 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gegaaggatg aegeegeagg teaggegatt getaaeegtt ttaettetaa eattaaagge 180
ctgactcagg cggcccgtaa cgccaacgac ggtatttctg ttgcgcagac caccgaaggc 240
gcgctgtccg aaatcaacaa caacttacag cgtattcgtg aactgacggt tcaggccact 300
acagggacta actecgatte tgacetggae tecatecagg acgaaateaa atetegtett 360
gatgaaattg accgcgtatc cggccagacc cagttcaacg gcgtgaacgt gctggcgaaa 420
gacggttcaa tgaaaattca ggttggtgcg aatgacggcg aaaccatcac gatcgacctg 480
aaaaaaatcg attctgatac tctgggtctg aatggcttta acgtaaatgg taaaggtact 540
attaccaaca aagetgeaac ggtaagtgat ttaaettetg etggegegaa gttaaacace 600
acqacaggtc tttatgatct gaaaaccgaa aataccttgt taactaccga tgctgcattc 660
gataaattag ggaatggcga taaagtcaca gttggcggcg tagattatac ttacaacgct 720
aaatctggtg attttactac cactaaatct actgctggta cgggtgtaga cgccgcggcg 780
caggetgetg atteagette aaaaegtgat gegttagetg ceaecettea tgetgatgtg 840
ggtaaatctg ttaatggttc ttacaccaca aaagatggta ctgtttcttt cgaaacggat 900
tcagcaggta atatcaccat cggtggaagc caggcatacg tagacgatgc aggcaacttg 960
acgactaaca acgctggtag cgcagctaaa gctgatatga aagcgctgct caaagcagcg 1020
agcgaaggta gtgacggtgc ctctctgaca ttcaatggca cagaatatac catcgcaaaa 1080
gcaactcctg cgacaaccac tccagtagct ccgttaatcc ctggtgggat tacttatcag 1140
gctacagtga gtaaagatgt agtattgagc gaaaccaaag cggctgccgc gacatcttca 1200
attaccttta attccggtgt actgagcaaa actattgggt ttaccgcggg tgaatccagt 1260
gatgctgcga agtcttatgt ggatgataaa ggtggtatca ctaacgttgc cgactataca 1320
gtetettaca gegttaacaa ggataaegge tetgtgaetg ttgeegggta tgetteageg 1380
actgatacca ataaagatta tgctccagca attggtactg ctgtaaatgt gaactccgcg 1440
ggtaaaatca ctactgagac taccagtgct ggttctgcaa cgaccaaccc gcttgctgcc 1500
ctggacgacg caatcagete categacaaa tteegttett eeetgggtge tatecagaac 1560
cqtctqqatt ccgcagtcac caacctgaac aacaccacta ccaacctgtc cgaagcgcag 1620
tecegtatte aggaegeega etatgegaee gaagtgteea acatgtegaa agegeagate 1680
attcagcagg ccggtaactc cgtgctggca aaagctaacc aggtaccgca gcaggttctg 1740
                                                                  1758
tctctgctgc agggttaa
<210> 64
<211> 1758
<212> DNA
<213> Escherichia coli
<400> 64
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaaataa tatcaacaag 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgccgcggg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcacagac caccgaaggc 240
gcgctgtctg aaatcaacaa caacttacag cgtatccgtg agctgacggt tcaggcttct 300
accggaacta actctgattc ggatctggac tccattcagg acgaaatcaa atcccgtctt 360
gatgaaattg accgcgtatc cggccagacc cagttcaacg gcgtgaacgt actggcaaaa 420
gacggttcga tgaaaattca ggttggtgcg aatgacggtg aaactatcac tatcgacctg 480
aagaaaatcg attctgatac tctgggtctg aatggtttta acgtaaatgg taaaggtact 540
attaccaaca aagctgcaac ggtaagtgat ttaacttctg ctggcgcgaa gttaaacacc 600
acgacaggtc tttatgatct gaaaaccgaa aataccttgt taactaccga tgctgcattc 660
gataaattag ggaatggcga taaagtcacc gttggcggcg tagattatac ttacaacgct 720
aaatctggtg attttactac caccaaatct actgctggta cgggtgtaga cgccgcggcg 780
caggetactg atteagetaa aaaacgtgat gegttagetg ceaccettea tgetgatgtg 840
ggtaaatctg ttaatggttc ttacaccaca aaagatggta ctgtttcttt cgaaacggat 900
tcagcaggta atatcaccat cggtggaagc caggcatacg tagacgatgc aggcaacttg 960
acgactaaca acgctggtag cgcagctaaa gctgatatga aagcgctgct taaagccgcg 1020
agegaaggta gtgaeggtge ttetetgaea tteaatggea etgaatatae tategeaaaa 1080
gcaactcctg cgacaacctc tccagtagct ccgttaatcc ctggtgggat tacttatcag 1140
gctacagtga gtaaagatgt agtattgagc gaaaccaaaag cggctgccgc gacatcttca 1200
attaccttta attccggtgt actgagcaaa actattgggt ttaccgcggg tgaatccagt 1260
```

gatgctgcga agtcttatgt ggatgataaa ggtggtatta ctaacgttgc cgactataca 1320

```
actgatacca ataaagatta tgctccagca attggtactg ctgtaaatgt gaactccgcg 1440
ggtaaaatca ctactgagac taccagtgct ggttctgcaa cgaccaaccc gcttgctgcc 1500
ctggacgacg ctatcagctc catcgacaaa ttccgttctt ccctgggtgc tatccagaac 1560
cgtctggatt ccgcagtcac caacctgaac aacaccacta ccaacctgtc tgaagcgcag 1620
tcccgtattc aggacgccga ctatgcgacc gaagtgtcca acatgtcgaa agcgcagatt 1680
atccagcagg ccggtaactc cgtgctggca aaagccaacc aggtaccgca gcaggttctg 1740
tctctgctgc agggttaa
<210> 65
<211> 1758
<212> DNA
<213> Escherichia coli
<400> 65
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaag 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgccgcggg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcacagac cactgaaggc 240
gcgctgtccg aaatcaacaa caacttacag cgtatccgtg agctgacggt tcaggcttct 300
accgggacta actctgattc ggatctggac tccattcagg acgaaatcaa atcccgtctc 360
gacgaaattg accgcgtatc cggtcagacc cagttcaacg gcgtgaacgt actggcaaaa 420
gacggttcga tgaaaattca ggttggtgcg aatgacggtg aaactatcac tatcgacctg 480
aagaaaatcg attctgatac tctgggtctg aatggtttta acgtaaatgg taaaggtact 540
attaccaaca aagetgeaac ggtaagtgat ttaacttetg etggegegaa gttaaacace 600
acgacaggic titatgatci gaaaaccgaa aataccitgi taactaccga tgctgcatic 660
gataaattag ggaatggcga taaagtcacc gttggcggcg tagattatac ttacaacgct 720
aaatctggtg attttactac caccaaatct actgctggta cgggtgtaga cgccgcggcg 780
caggctactg attcagctaa aaaacgtgat gcgttagctg ccacccttca tgctgatgtg 840
ggtaaatctg ttaatggttc ttacaccaca aaagatggta ctgtttcttt cgaaacggat 900
tcagcaggta atatcaccat cggtggaagc caggcatacg tagacgatgc aggcaacttg 960
acgactaaca acgctggtag cgcagctaaa gctgatatga aagcgctgct taaagccgcg 1020
agcgaaggta gtgacggtgc ctctctgaca ttcaatggca ctgaatatac tatcgcaaaa 1080
gcaactcctg cgacaacctc tccagtagct ccgttaatcc ctggtgggat ttcttatcag 1140
gctacagtga gtaaagatgt agtattgagc gaaaccaaag cggctgccgc gacatcttca 1200
attaccttta attccggtgt actgagcaaa actattgggt ttaccgcggg tgaatccagt 1260
gatgctgcga agtcttatgt ggatgataaa ggtggtatta ctaacgttgc cgactataca 1320
gtetettaca gegttaacaa ggataacgge tetgtgactg ttgcegggta tgetteageg 1380
actgatacca ataaagatta tgctccagca attggtactg ctgtaaatgt gaactccgcg 1440
ggtaaaatca ctactgagac taccagtgct ggttctgcaa cgaccaaccc gcttgctgcc 1500
ctggacgacg ctatcagete catcgacaaa ttccgttett ceetgggtge tatccagaac 1560
cgtctggatt ccgcagtcac caacctgaac aacaccacta ccaacctgtc tgaagcgcag 1620
tcccgtattc aggacgccga ctatgcgacc gaagtgtcca acatgtcgaa agcgcagatt 1680
atccagcagg ccggtaactc cgtgctggca aaagccaacc aggtaccgca gcaggttctg 1740
tctctgctgc agggttaa
<210> 66
<211> 1788
<212> DNA
<213> Escherichia coli
<400> 66
atggcacaag tcattaatac caacagcctc tcgctgatca ctcaaaataa tatcaacaaq 60
aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgccgcggg tcaggcgatt gctaaccgtt ttacttctaa cattaaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcacagac cactgaaggc 240
gcgctgtccg aaatcaacaa caacttacag cgtatccgtg agctgacggt tcaggcttct 300
accegggacta actetgatte ggatetggae tecatteagg acgaaateaa atecegtete 360
gacgaaattg accgcgtatc cggtcagacc cagttcaacg gcgtgaacgt actggcaaaa 420
gacggttcga tgaaaattca ggtaggtgcg aacgacggcc agactatcac tattgatctg 480
aagaaaattg actctgatac gctggggctg aatggtttta acgtgaatgg ttccggtacg 540
atagccaata aagcggcgac cattagcgac ctgacagcag cgaaaatgga tgctgcaact 600
aatactataa ctacaacaaa taatgcgctg actgcatcaa aggcccttga tcaactgaaa 660
gatggtgaca ctgttactat caaagcagat gcagctcaaa ctgccacggt ctatacatac 720
aatgcatctg ctggtaactt ctcattcagt aatgtatcga ataatacttc agcaaaagca 780
ggtgatgtag cagctagcct tctcccgccg gctgggcaaa ctgctagtgg tgtttacaaa 840
gcagcaagcg gtgaagtgaa ctttgatgtt gatgcgaatg gtaaaattac aatcggagga 900
caggaageet atttaactag tgatggtaac ttaactacaa acgatgetgg tggtgegact 960
```

```
geggetaege ttgatggttt atteaagaaa getggtgatg gteaateaat egggtttaat 1020
aagactgcat cagtcacgat ggggggaaca acttataact ttaaaacggg tgctgatgct 1080
ggtgctgcaa ctgctaacgc aggggtatcg ttcactgata cagctagcaa agaaaccgtt 1140
ttaaataaag tggctacagc taaacaaggc acagcagttg cagctaacgg tgatacatcc 1200
gcaacaatta cctataaatc tggcgttcag acgtatcagg cggtatttgc cgcaggtgac 1260
ggtactgcta gcgcaaaata tgccgataat actgacgttt ctaatgcaac agcaacatac 1320
acagatgctg atggtgaaat gactacaatt ggttcataca ccacgaagta ttcaatcgat 1380
gctaacaacg gcaaggtaac tgttgattct ggaactggtt cgggtaaata tgcgccgaaa 1440
gtcggggctg aagtatatgt tagtgctaat ggtactttaa caacagatgc aactagcgaa 1500
ggcacagtaa caaaagatcc actgaaagct ctggatgaag ctatcagctc catcgacaaa 1560
ttccgttcat ccctgggggc tatccaaaac cgtttggatt ccgccgtcac caacctgaac 1620
aacaccacta ccaacctgtc tgaagcgcag tcccgtattc aggacgccga ctatgcgacc 1680
gaagtgtcca acatgtcgaa agcgcagatt atccagcagg ccggtaactc cgtgctggca 1740
aaagccaacc aggtaccgca gcaggttctg tctctactqc agggttaa
<210> 67
<211> 1398
<212> DNA
<213> Escherichia coli
<400> 67
aacaaatctc agtettetet tagetetget attgagegte tgtettetgg tetgegtatt 60
aacagcgcaa aagacgatgc agcaggtcag gcgattgcta accgttttac ggcaaatatt 120
aaaggtetga eecaggette eegtaaegea aatgatggta titetgtige geagaceaet 180
gaaggtgcgc tgaatgaaat taacaacaac ctgcagcgta ttcgtgaact ttctgttcag 240
gcaactaacg gtactaactc tgacagtgac ctgacctcca tccagtccga aatccagcag 300
cgtctgagtg aaattgaccg tgtttctggt cagactcagt ttaacggcgt taaagtgctg 360
gcttctgatc aggatatgac tattcaggtt ggtgcaaacg acggcgaaac aattactatt 420
aaactgcagg aaattaattc cgacacactg ggattatctg gttttggtat taaagatcct 480
actaaattaa aagccgcaac ggctgaaaca acctattttg gatcgacagt taagcttgct 540
gacgctaata cacttgatgc agatattaca gctacagtta aaggcactac gactccgggc 600
caacgtgacg gtaatattat gtctgatgct aacggtaagt tgtacgttaa agttgccggt 660
tcagataaac ccgctgaaaa tggttattat gaagttactg tggaggatga tccgacatct 720
cctgatgcag gtaagctgaa gctgggggct ctagcgggta cccagcctca agctggtaat 780
ttaaaggaag tcacaacggt gaaagggaag ggggctattg atgttcagtt gggtactgat 840
accgcaaccg cttctatcac aggtgcaaaa ctctttaagt tagaagacgc caatggcaaa 900
gatactggtt catttgcgtt gattggtgat gacggtaaac agtatgcagc gaatgttgat 960
cagaaaacag gagcagtttc cgttaaaaca atgtcttaca ctgatgctga cggtgtcaaa 1020
cacgacaatg ttaaagttga actgggtgga agcgatggca aaaccgaagt tgtaactgca 1080
accgatggca aaacttacag tgttagtgat ttacaaggta agagcctgaa aactgattct 1140
attgcagcaa tttctacgca gaaaacagaa gatcctttgg ctgctatcga taaaqcactg 1200
teteaggttg actegttgeg ttetaaceta ggtgeaatte aaaategttt egaetetgee 1260
atcaccaacc ttggcaacac cgtaaacaac ctgtcttctg cccgtagccg tatcgaagat 1320
gctgactacg cgaccgaagt gtctaacatg tctcgtgcgc agatcctgca acaagcgggt 1380
acctctgttc tggcgcag
<210> 68
<211> 1479
<212> DNA
<213> Escherichia coli
<400> 68
aacaaatctc agtcttctct gagctccgcc attgaacgtc tctcttctgg cctgcgtatt 60
aacagtgcta aagatgacgc agcaggtcag gcgattgcta accgttttac agcaaatatt 120
aaaggtetga eteaggette eegtaaegeg aatgatggta titetgtige geagaeeact 180
gaaggtgcgc tttctgaaat caacaataac ttacagcgta ttcqtgaatt gtcagtacaq 240
gccactaatg gtacaaactc tgactccgac ctgaattcaa ttcaggatga aattacacaa 300
cgccttagtg aaattgatcg tgtttctaac cagacacaat ttaatggtgt aaaagttctg 360
gcttctgatc agactatgaa aattcaagta ggtgcgaacg atggtgaaac cattgagatt 420
gcccttgata aaattgatgc taaaaccttg gggcttgata actttagcgt agcaccagga 480
aaagtteeaa tgteetetge ggttgeactt aagagegaag eegeteetga ettaactaag 540
gtaaatgcaa ctgatggtag tgtgggaggt gctaaagcat tcggtagcaa ttataaaaat 600
gctgatgttg aaacttattt tggtaccggt aatgtacaag atacaaagga tacaactgat 660
gcgaccggta ctgcaggaac aaaagtttat caagtacagg tggaagggca gacttatttt 720
gttggtcaag ataataatac caacacgaac ggttttacat tattgaaaca aaactctaca 780
ggttatgaaa aagttcaggt gggtggtaag gatgttcagt tagcaaactt tggtggtcgt 840
```

